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ABSTRACT

Designed to assist in planning at J. Sargeant Reynolds Community College (JSRCC), this report presents the results of a year-long study of local manpower needs and educational and training interests. Chapter I provides background on the school and the purpose of this community manpower assessment study. Chapter II focuses on study methodology, which included surveys of area high school seniors and community households, interviews with community leaders, and an analysis and review of related resources. After chapter III presents the economic framework for the study, chapter IV addresses the community's perceptions of JSRCC and the role it should play in meeting local training requirements. Chapter V looks at the occupations of the future, considering the following topics: the influence of technology; the merger of traditional skills and electronic equipment usage skills; the demand for manufacturing, maintenance, and repair technicians; the influence of an aging population; health care trends; skilled trade occupations; agriculture and horticulture occupations; post-baccalaureate careers; and the demand for supervisory and sales personnel. Chapter VI highlights skills and training needs, while chapter VII considers the occupational choices of local citizens and high school seniors as determined by academic program interest. Chapter VIII provides a rationale for partnership with business and industry, considering the college's role in, mechanisms for, and benefits of such partnerships. Finally, chapter IX offers recommendations for college planning. Survey instruments are appended. (LAL)

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J. SARGEANT REYNOLDS COMMUNITY COLLEGE
PREPARING FOR THE FUTURE

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ACKNOWLEDGEMENTS

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FOREWORD

This report is the culmination of a year-long study of the role of J. Sargeant Reynolds Community College in addressing the manpower needs of its service area. The title "Preparing for the Future" is particularly appropriate as the academic programs developed by the College today must prepare individuals for the challenges of the next decade. The findings contained in this report combine available factual data with an enlightened vision of the future to provide academic planners with a valuable insight into tomorrow's occupational needs. Such a resource is an invaluable tool which must be employed at all levels of the College to assure that this institution will, to the best of its ability, assist in meeting the needs of the community.

I am particularly grateful to those dedicated and farsighted community leaders who willingly gave their valuable time and expertise to work directly with Dr. Allan and her staff to provide the direction for this study. Their commitment to this undertaking is indicative of the spirit and vitality of the community which it is our pleasure to serve. I would also like to thank the many persons representing government, civic organizations and businesses, the local citizenry and the high school seniors throughout the area who provided the information on which this report is centered.

In December of 1982, the Virginia Division of Industrial Development noted in its recommendations to the Governor that ". . . there will be an increasing need for education and training that relates to and supports economic development. Educational institutions at all levels will need to become more involved in the process of economic development."*

The dynamic economic environment projected in the pages of this report presents the College with many exciting opportunities to participate in the social and economic development of the community. J. Sargeant Reynolds Community College welcomes these opportunities and reaffirms its commitment to serve the educational and training needs of the future.

S. A. Burnette
President

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*Scott Eubanks, Virginia's Economic Development Strategies for the Future (N.P.: Virginia Division of Industrial Development, 1982), p. 22.

PREFACE

The document which follows has been prepared for use by the faculty and administrators of J. Sargeant Reynolds Community College. The research findings are presented from the perspective of the College--what local economic and social factors and what community perceptions of the College must be considered by the institution as it plans for future service to the area. There is, however, a vast quantity of information given in this report which would be useful to persons outside of the College, such as economic development personnel, local government planners, job training coordinators, high school counselors and administrators, and personnel directors for area businesses.

The primary emphasis of the report is on the identification of the manpower needs of local employers over the next five to ten years. These needs are described both in terms of types of jobs and the specific skills required for these jobs. Also presented here are the results of a study undertaken to identify the intended areas of study for those persons planning to attend the College. The degree to which the jobs of the future and the individual career interests of entering students do not mesh becomes an issue for the College academic planners to reconcile. A major consideration in these decisions is the fact that the College does hold high among its priorities the assurance that there are jobs available for the graduates of its programs.

Recognizing that the College must serve in partnership with other local agencies to provide for the social well-being of the community, this report also examines some of the social needs of the area. Several of the study participants offered suggestions for ways the College might respond to these needs through its community service activities. These ideas have been summarized in this report.

It has been the intent of the preparers of this document to present as futuristic and visionary description of what lies ahead for the community as resources and expedience would permit. The description of the future presented here goes beyond mere projections based on information from the past. For too long a time, organizations of all types within our society have operated on the premise that accumulated wisdom of the past provided adequate planning for the future. Trend lines, dependent on past history, have become too short. The acceleration of technological advances is increasing today at such a rapid rate that, as forecasters Marvin Cetron and Thomas O'Toole have stated, "the future is arriving faster everyday."

Forecasting, in contrast with projecting, involves the collection of data about things present and things known to be about to happen, the analysis (or breaking down) of this information, and then the synthesis of these multiple events to arrive at perhaps a new configuration of future events that is not predictable through straightforward projection techniques. It is this process that the College staff has attempted to go through in preparing this report. It must be noted, however, that while this forecasting procedure was followed, the staff also cautiously maintained a boundary on the degree to which social, economic, and technological changes are expected to take place. This report is more pragmatic than perhaps the truly dedicated visionaries would subscribe to, but as a guide for specific future actions by the College such an approach seems justified. Hopefully the reader will discover some new perspectives about what the future holds over the next few years for our community, particularly in the area of the types of jobs which will be in demand and the skills required by these jobs.

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Chapter I

PURPOSE OF THE COMMUNITY MANPOWER ASSESSMENT STUDY

J. Sargeant Reynolds is a comprehensive community college serving the counties of Goochland, Hanover, Henrico, Powhatan, Louisa (shared with Piedmont Community College) and the City of Richmond north of the James River. In 1980, there were 417,366 persons residing in this service area of approximately 1,809 square miles. To serve this extensive and diverse area, the College has established three permanent campuses: (1) The Parham Road Campus located in the suburban county of Henrico; (2) The Downtown Campus located near the heart of the City of Richmond, and: (3) The Western Campus located in the rural setting of Goochland County.

The rapid increase in the use of new technologies in the workplace is placing new skill requirements on persons entering the labor market as well as on those presently employed. It cannot be overemphasized that the future prosperity of the College service area lies in the availability of an adequate number of workers with the requisite skills to support existing businesses and to attract new ones. Providing high quality educational programs, which meet the present and future needs of the citizenry and the businesses of this locality, is a constant challenge to the College. Primary to achieving this type of service to the community is the maintenance by the College of a realistic, yet visionary, plan for offering an appropriate mix of educational programs. Such a plan must extend to the determination of the most effective curricular design within each of these programs.

In order to assist curricular planners to respond to this challenge, the College established in 1982 an institutional objective which states: "To assure that the educational programs and activities provided by the College are relevant to community needs the College will develop, conduct, and analyze a comprehensive long-range needs assessment of students, business, industry and the population of the service area". The present study was undertaken to fulfill this objective and to set into motion a system for more accurately assessing and responding to community needs. Funds to carry out the study called for in this objective were provided in part by the U.S. Department of Education and, to a much larger extent, by the College Board from monies received by the College from the local governments. The findings of this study will be submitted to the College Curriculum Committee to assist them in the evaluation of the need for existing programs and to identify a need for the creation of new programs.

To carry out this study the Office of Educational Planning and Research undertook four major projects: (1) A survey of selected high school seniors in each of the political subdivisions of the College service area. (2) A mass mailing survey of randomly selected residents of the College service area. (3) Personal interviews with community leaders, including management in business, industrial and government organizations, political officials, and officers of professional and civic organizations. (4) A review of other research efforts as well as other data and literature related to manpower needs.

In the process of conducting this study, the College relied heavily on the advice of a selected group of community leaders who graciously consented to serve on the study's Citizens Task Force. The Task Force was composed of business leaders from each of the localities in the College service area. For this reason, the Task Force not only provided invaluable expertise regarding the needs of employers but also supplied a vital link with the community. The success of this study is to a great extent due to the efforts of these civic-minded individuals.

The time when academic planners could accurately rely solely on expressed student interests and the expertise of educators to develop curriculums has ended, if indeed it ever truly existed. The increasing sophistication and technical expertise required in today's rapidly changing marketplace, coupled with the subsequent dramatic increase in the cost of state-of-the-art training, has made interaction with the business community more important than ever before. The synthesizing of information derived from the various projects conducted in this study will provide College planners with a comprehensive view of the needs of the community. Such a perspective is essential if the College is to effectively employ its resources to achieve its mission of service to the community.

Chapter II

METHODOLOGY

From January 1983 to January 1984 J. Sargeant Reynolds Community College conducted a Manpower Needs Assessment of its service area which comprises the counties of Goochland, Hanover, Henrico, Louisa, Powhatan and the City of Richmond (north of the James River). The study was designed to be comprensive in nature, measuring both the demand for courses and programs by the population in the service area and the educational and training needs of employers. To the extent possible within the context of the study, appropriate social needs and issues were also addressed.

The comprehensive nature of this undertaking required the collection of various data from several segments in the community, as well as from more global sources where the data contained implications for the immediate locality. For this reason four separate but related projects were undertaken: (1) a survey of seniors in the public high schools, (2) a survey of randomly selected households in the service area, (3) interviews with various businesses and political/civic leaders in the community, and (4) an analysis of primary and secondary sources related to the study of manpower needs. Each of these components of the study, while conducted separately was designed to provide information which would complement that which was provided by the other three to allow the results from all projects to be integrated into one final report. The methodology employed in each component is described below:

1. Survey of Area High School Seniors

In January 1983, the superintendents of schools for each county in the College's service area and the City of Richmond were contacted to request their permission to conduct the high school student survey at each high school within their jurisdiction. Each superintendent approved the request and asked the College to contact each high school individually to carry out the required logistics.

With only one exception, each high school within the service area agreed to distribute the surveys to a sample of senior homerooms or senior classes (i.e. Senior English). An appropriate sample size for each school was then determined based on the proportion of seniors at each school. An overall sample representing 12% of the total high school senior population was desired. Table 1 provides a list of the high schools in the service area with the number of seniors currently attending, the desired sample size, and the actual sample size.

TABLE 1
High School Student Sample Sizes

High School	Total No. Seniors	Desired Sample Size (12% of Total)	Actual Sample Size
Goochland County			
Goochland High School	125	15	21
Hanover County			
Lee Davis High School	518	62	56
Patrick Henry High School	307	37	35
Henrico County			
Godwin High School	238	29	28
Douglas Freeman High School	497	60	Did not Participate
Henrico High School	368	44	42
Hermitage High School	404	49	53
Highland Springs High School	411	49	38
J. R. Tucker High School	446	54	67
Varina High School	251	30	25
Louisa County			
Louisa High School	245	29	28
Powhatan County			
Powhatan High School	126	15	22
City of Richmond			
Armstrong-Kennedy High School	410	49	43
Jefferson-Huguenot-Wythe	577	69	85
Marshall-Walker	376	45	33
TOTALS	5299	636	576

Because of the varying sizes of senior homerooms and classes and the desire to simplify the distribution process, only entire classes were surveyed. Once the appropriate number of classes at each school was determined, a packet of surveys for each class was sent to the school's designated contact person. The school representatives were asked to select classes that contained a random mix of students and to avoid selection of "honors" or other similarly unique classes. The representatives then were instructed to distribute the surveys in each class, collect them, and return the packets in a self-addressed, stamped envelope.

Due to this distribution method, the actual number of respondents from each school may deviate slightly from the desired number of returns. However, when the one non-participating school is deleted, the actual total sample size is the desired 12 percent of the total number of seniors in the area high schools. A summary of the number of actual responses received is found in Table 1.

To alleviate the effect of the slightly disproportionate sample sizes within each school, a series of weights were applied to the results. This weighting factor is a function of the population size within each school. The effect of applying these weights was to adjust the actual number of returns to be proportional to the desired number of returns. Only weighted results are presented in this study.

2. Survey of Community Households

A survey of households was conducted in order to ascertain the views and needs of the population for subsequent incorporation into the study. Prior to the initiation of the survey of selected households in the community, a pilot survey was conducted to pretest the sampling procedures and the associated survey instrument. The pilot sample was designed to be approximately 10% of the number of individuals to be contacted for the actual needs assessment project. Adjustments to the survey instrument and data collection procedures were made accordingly.

Selection of the Survey Sample

The unique mission of a community college requires an acute sensitivity and responsiveness to many of the diverse needs of the community it serves. The demographic diversity of the service area was, therefore, a significant consideration in the selection of the survey sample. To fulfill its mission of providing a well planned comprehensive educational program, J. Sargeant Reynolds Community College must respond to the various needs of the urban, suburban, and rural communities served by the College. For this reason, attention was given not only to the randomness of the survey sample selected but to its geographic distribution as well.

A stratified random sampling technique was employed in the selection of households to be surveyed for the Manpower Needs Assessment. The survey sample was selected using political subdivisions as the stratification variable. By viewing each political subdivision as a subset of the total population the project was able to employ a sample which reflected the diverse nature of our service area more accurately than random sampling alone. Thus, by using stratified random sampling the expected sampling error was reduced.

The process used to collect the sample was tested in the pilot study and is described in some detail here. Listings in the telephone directories for the various localities in the service area provided the sampling frame (population) from which the stratified random sample was drawn. A major consideration in using the telephone directories to secure the sample was to assure that the elements drawn for the sample could be contacted by phone prior to the mailing of the survey. It was recognized that employing telephone directories increases, somewhat, the sampling error (e.g. 1.9 percent of telephones in the area covered by the Greater Richmond Telephone Directory have unlisted numbers plus the residents who do not have telephones at all). However, the advantage of the significantly higher response rate anticipated as a result of prior telephone contact outweighed these concerns.

Telephone directory listings for residents of the service area are contained in five separate directories. When all listings for a unique political subdivision (county or city) were contained in a single directory, the total number of individual listings selected was required by the stratification to be equal to the proportion of the total population of the service area represented by that locality in the 1980 census. Where the desired political subdivision and the directory listings did not coincide, every effort was made to maintain the selection proportional to the subdivision populations. The exclusion of listings outside the service area was accomplished by examining the zip code area of each listing or the first three digits o[illegible] telephone number when these corresponded specifically to a particular political unit. This process resulted in a selected sample of 864 residences within the service area.

Each prospective participant was contacted by telephone to obtain the agreement of the individual to participate. Upon receiving approval from the individual, callers confirmed the individual's name and address.

Through this calling process, 805 of these numbers were contacted by phone. Of this number, 543 residents agreed to complete the survey; 117 were unavailable for numerous reasons[1] and 145 residents declined to complete the survey. Surveys were sent to 543 households. Non-respondents were mailed up to a total of two follow-up requests (one which included a letter and an additional survey and the other a simple postcard request). After the completion of all mailings an additional 75 phone calls were made to residences who had failed to respond.

The process described above resulted in 398 responses, 13 of which had to be deleted as respondents which phone calls had previously identified as residing outside the service area. Final editing found that an additional 4 surveys had to be deleted as a result of unusuable responses or upon the finding that they had been inadvertently sent to households out of the service area. Correcting for these deletions, the final return was 381 for a response rate to the mailing of 72 percent.

3. Interviews with Community Leaders

To call upon the knowledge and experience of particular individuals within the College service area, the Manpower Needs Study contained a component devoted to interviews with persons from the management staff of selected businesses, industries, and civic organizations, as well as political leaders and government officials. Three unique interview schedules were developed to accommodate the areas of expertise provided by community leaders from three major categories, namely representatives of business and industry, civic organizations, and political and governmental bodies. The interview schedules were tested for clarity and completeness through role playing and pilot interviews.

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[1] Persons who were hospitalized, had moved, died, had changed or disconnected phone numbers or would be out of the area for an extended period of time were considered unavailable. While businesses were supposed to be excluded from the telephone listing employed, several were inadvertently included in the initial sample selection. These were also included in the unavailable count.

Interview Role Playing

Role playing for the interviews served two functions:(1) a training session for the interviewers and (2) a method for testing the interview schedules for clarity, accuracy, and comprehensiveness. Seven individuals, chosen for interest or knowledge in a specific area, played the role of an executive representing each of the following areas: High Technology Business; Industrial Business; Large Retail Business; State Political Official; State Governmental Official; Local Political Leader; and Civic Leader. Each role playing interview was approximately thirty minutes in duration, followed by a critique of the interview. Specific attention was given to the clarity of the questions, the completeness of the interview for information received, and the accuracy of recorded responses. Following the role playing sessions, the three interview schedules were revised to reflect changes suggested by the role playing.

Pilot Interviews

In addition to the role playing, twenty interviews were conducted as part of the pilot study. These interviews included the ten members of the Citizens Task Force and ten additional business and industry leaders recommended by Task Force members. Upon completion of these interviews, the schedule and methodology were discussed with the Task Force to assure effectiveness for this portion of the study.

Developing the Interview List

In order to develop a representative distribution of businesses and industries, a list of the major categories of companies was prepared. The following major categories were included:

(1) Banking and Finance
(2) Retailing
(3) Manufacturing
(4) Public Services
(5) Construction and Related Businesses
(6) Health Services
(7) Agriculture and Related Businesses
(8) Business Services and Supply
(9) Communications
(10) Computer Related
(11) Corporate Administration

After the major employment categories were identified, specific employers were selected for interviewing. Careful attention was given to selecting a wide range of individual businesses and industries in relation to size and type. A complete list of the interviews conducted in the study can be found in Appendix C.

Interviews Conducted for the Study

Once the list of businesses and individuals to be interviewed was established, a letter was sent from the Task Force describing the project and requesting assistance. This letter was followed by a call from the interviewer who set up an appointment and sent a confirmation letter which also outlined the general topics to be addressed in the interview.

Upon completion of each interview, a Thank You letter was sent and the interviewer completed and submitted a brief "Recap Sheet" and a written summary of the interview, in addition to the actual responses to individual items on the schedule which were secured during the interview session. A total of 111 interviews were completed during the project. The distribution of these interviews is shown below:

TABLE 2
Number of Interviews by Type of Organization

Categories by Type of Organization or Business	Number of Interviews Within Category	Percent*
Political and Civic	17	15
Banking and Finance	8	7
Retailing	14	13
Manufacturing	5	5
Public Services	11	10
Construction and Related Businesses	11	10
Health Services	12	11
Agriculture and Related Businesses	6	5
Business Service and Supply	9	8
Communications	6	5
Computer Related	6	5
Corporate Administration	6	5

*Percent does not equal 100 due to rounding

Analysis of Interview Data

To summarize the results of the interview sessions, a content analysis, using the Q-Sort technique, was undertaken. This technique involved the categorization of responses by theme or issue. A panel of four judges independently placed each response found on the summary sheets in one of the 23 predetermined thematic categories. The full interview schedule was also available for the judges reference if needed to assist with the sort. Once sorted, each issue or thematic grouping was categorized by type of organization or business and analyzed to provide the information necessary to the completion of the report.

4. Analysis and Review of Primary and Secondary Sources Related to Manpower Needs

In addition to the data provided by the surveys and interviews discussed above, extensive use was made of a variety of primary and secondary sources. These sources include employment data from state and federal agencies and other research efforts, as well as numerous periodicals and books associated with matters related to employment both now and in the future.

Several reports on earlier manpower studies were used in the initial stages of the present study for guidance in the methodology development. Other sources provided data on a national, regional, and state-wide scale which facilitated comparative analyses with the data collected from the immediate locality. A significant contribution to the research efforts of this study come from a small but important collection of recently published futurist books, presenting a view of the world as it may exist in five, ten, or twenty years. The insights gleaned from these publications enabled the researchers to analyze their statistical data within a futuristic context.

This J. Sargeant Reynolds Community College study is the result of a thorough analysis of each of the major research components described above. The report which follows is a synthesis of these analytical efforts and is intended to offer the reader a richer and more comprehensive understanding of the actions which the College must undertake to address the curricular interests of the local residents and the future manpower needs within the College service area.

Chapter III

ECONOMIC FRAMEWORK FOR THE STUDY

Any examination of manpower needs is necessarily influenced by prevalent economic conditions. The most objective observer attempting to describe long-term conditions cannot totally disassociate himself from the economic reality which surrounds him on a daily basis. The influence of prevalent economic factors upon projections varies with each individual and situation and therefore cannot be measured or factored out of any study. However, fairness and accuracy demand that an analysis of the results from studies such as the present one include a description of the economic context in which the results were obtained.

The Study presented here was initiated during a period of substantial economic transformation. While the stock market, as measured by the Dow Jones industrial average, had embarked upon a dramatic rise in August of 1982, the general economy had not exhibited the recovery anticipated by this leading economic indicator. The nation's economy was in a period of general recession. Unemployment, which had reached the highest levels since the second World War, remained very high. Basic industries and businesses had been facing serious economic conditions compounded by extremely high interest rates. There was also serious concern regarding the International Banking System, as several developing nations appeared unable to repay huge debts. A summary of the results of a survey conducted among small businesses in July 1982 by the National Federation of Independent Business Research and Education Foundation reflected the mood from this sector of the economy at that time:

> The current economic condition of small businesses is grim. . . . In fact, the critical element in understanding where small business currently stands is understanding that these firms have been subject to recession conditions for nearly three consecutive years (excepting early 1981). This cumulative phenomenon explains why individual measures are often better or, at least, no worse than the depths of the 1974-75 recession even though the total impact appears more severe.
>
> There was no evidence in either small business performance over the second quarter or small business expectations for the third quarter to support the proposition that the current recession is about to end.[1]

The transitory nature of the prevalent economic conditions at the onset of the study is illustrated in an article published in this same journal only six months later in January 1983:

> It is over--or so it would appear. After three years of recession-like conditions, small business can look forward to better times. January seems to have been the watershed. Small business performance in the fourth quarter provided no evidence that any change was occurring; the latter part of the year was more of the same and 1982 had not been a good year. But first quarter plans had definitely changed; they had risen sharply.
>
> General optimism was at record levels in January, but more important, actual plans compared favorably with plans occurring during recovery from the '74-'75 recession.[2]

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[1] William C. Dunkelberg, Jonathan A. Scott, and William J. Dennis, NFIB Quarterly Economic Report for Small Business No. 36, July 1982 (San Mateo, California: National Federation of Independent Research and Education Foundation), p. 1.

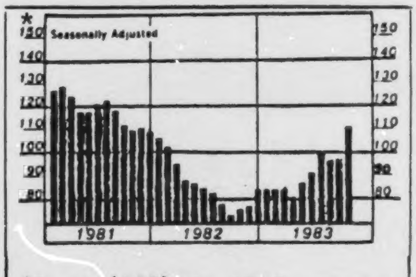
[2] Dunkelberg, Scott and Dennis, NFIB Quarterly Economic Report for Small Business No. 38, January 1983, p. 1.

The economic recovery predicted by stock prices and fueled by reduced interest rates, continued throughout the nine month period in which the College's manpower study was conducted. The nation's Gross National Product grew substantially and such indices as auto sales and housing starts improved dramatically from their recessionary levels.

Throughout 1983, inflation remained under control. However, large federal deficits and the Federal Reserve Board's monetary policy remained a concern regarding their impact on both interest rates and inflation. Employment figures, a lagging indicator, improved but less dramatically than the economy in general, and large trade deficits caused by a strong American dollar demonstrated that foreign competition had not gone away.

Gains in employment, the concern of this study, were tempered by business and industry attempts to increase productivity through "leaner" operations in terms of personnel. Seasonally adjusted Help-Wanted Advertising as a barometer of employer needs is illustrated by the chart below for the United States covering the period January 1981 through October 1983.

FIGURE 1
Index of National Help-Wanted Advertising



*Base (100) is 1967 average

Source: The Wall Street Journal, December 6, 1983.

While this chart indicates a trend of increasing job openings during the period of the study, new hires were still substantially lower than pre-recession levels; and, as noted earlier, unemployment levels remained discouragingly high.

Virginia has traditionally enjoyed a higher rate of employment than the nation while the Richmond metropolitan area, which includes much of the College service area, consistantly has a higher percentage of the civilian labor force employed than the state at large. In November of 1983, for example, the average annual rate of unemployment for the United States was 8.1 percent compared with a rate of 5.6 percent for Virginia and only 4.6 percent for the Richmond metropolitan area and the College service area.[3]

As can be seen from Table 3 the employment rate for each locality in the College service area compares favorably with that of the state with the exception of the City of Richmond which is the same as the state, and Louisa county with a higher rate of unemployment (6.0%).

TABLE 3
Labor Force Statistics
November 1983

Locality	Civilian Labor Force	Unemployed	Percent Unemployment
Richmond City	121,903	6,707	5.6
Goochland County	6,160	246	4.0
Hanover County	27,571	951	3.4
Henrico County	98,981	3,577	3.6
Louisa County	11,260	670	6.0
Powhatan County	6,506	245	3.8
TOTAL COLLEGE SERVICE AREA	272,381	12,476	4.6

Source: Virginia Employment Commission, Division of Research & Analysis.

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[3] Virginia Employment Commission, Division of Research & Analysis.

In November of 1983, the civilian labor force residing in the service area totalled 272,381 persons. The great majority of these persons (81%) resided in the city of Richmond and the county of Henrico. The city of Richmond had the largest number of unemployed (6,787) while Powhatan and Goochland counties had the fewest unemployed persons.

It should be noted that, while the College service area enjoys a relatively high rate of employment, there are significant pockets of unemployment particularly in the city of Richmond and the county of Louisa. It must be recognized that the favorable environment for employment is largely the result of the many and diverse business and industrial concerns located in the area. Thus, this area, while affected by the recession, did not experience as severe conditions as other parts of the nation. The relative impact of the recession and recovery on national, state and local levels may be demonstrated by the comparison of unemployment rates in Table 4.

TABLE 4
Unemployment Rate (Percent)

	June 1981	1982 Annual Average	November 1983
United States	7.7	9.7	8.1
Virginia	6.0	7.7	5.6
Richmond Metropolitan Area	4.4	6.0	4.6

Source: Virginia Employment Commission, Division of Research & Analysis.

In the context of the economy briefly described above, high school seniors were asked to give their intentions regarding potential college attendance, households were requested to provide information regarding education desires, and employers were asked to discuss their present and future employment needs. Whether, and to what extent, these opinions were influenced by the grim experience of the recent past or the current optimism for a brighter future is impossible to determine.

Chapter IV

THE COMMUNITY'S PERCEPTIONS OF THE COLLEGE AND THE ROLE IT SHOULD PLAY IN MEETING LOCAL TRAINING REQUIREMENTS

In spite of any internal efforts the College may make to provide programs which satisfy the educational and training interests of the local citizens and the manpower needs of area employers, the extent of the College's actual service to the region is dependent upon the community's acceptance of the role of the institution in this endeavor. Acceptance is in part dependent upon the level of familiarity with the institution which exists in the community--its mission, its academic programs, and the locations of its campuses in relation to accessibility. Beyond specific knowledge about the College, its acceptance is ultimately based on the perceived satisfaction with the College's ability to fulfill the educational and training needs of its citizens and the manpower requirements of the local businesses.

Local Citizens' Awareness of the College

Currently, nearly three-quarters of the general population has some knowledge of the types of programs offered by the College. Sixty-four percent of the population is aware that the College has more than one campus. The campus known to the largest number of persons is the suburban one located in Henrico county. Eighty-six percent of the general population in the service area is aware of this campus location, 67 percent of the campus in downtown Richmond, and 28 percent of the Goochland campus.

Although it is important relative to the question of accessibility that the residents of the College service area are aware of the institution's attempt to minimize travel time for its students by the establishment of multiple locations, it is equally, if not more important, that the residents are at least aware of the campus most convenient to their homes. A significant 88 percent of the citizens in the College service area are aware of the presence of the particular campus located closest to their residence. Particularly noteworthy is the large number of persons residing closer to the recently established Western Campus than to the other campuses, who are knowledgeable of the presence of their local campus. Nearly three-quarters of the persons in the large rural area surrounding the Western Campus are aware of its location.

When asked to identify the most important factors which they believe attract students to attend the College, community respondents in the survey checked "convenient times and locations" more frequently than any of the other six items listed for selection. Obviously accessibility is perceived to be a very important factor in the students' decision to attend J. Sargeant Reynolds Community College. Following closely behind accessibility are the vocational and technical programs offered by the College and the low tuition costs. Complete results of responses to the question of which factors most influence students to enroll at J. Sargeant Reynolds are found in Table 5 . These findings are consistent with the local perceptions about the mission of the College held by the general population in the area and by the community leaders.

TABLE 5

Major Factors Which Attract Students to Attend the College as Perceived by Local Residents

Factor	Percent of Respondents Checking this Category
Convenient times and locations of course offerings.	70.0
The vocational and technical programs offered by the College.	68.4
The College's low tuition.	62.5
The opportunity to take first two years of four-year program.	36.7
The College's academic reputation.	19.6
Individual attention given to students.	7.8

The remainder of this section is devoted to a discussion of the role or mission of the community college as perceived by the local citizens. Following this is a section covering commonly held views of the community leaders as to what the role of the College is and what it should be.

The community's acceptance of the College as a contributor to the economic and social well-being of the local citizenry is highly dependent upon the level of the general understanding of the mission of the College. How well does the community perception of the role of the College correlate with the stated purposes of the institution?

Although the College operates under the assumption that its primary purpose is to train students for immediate entry into the job market, there are other significant roles that the institution is purposefully attempting to fulfill to achieve its stated mission. The College is well aware of its role as the provider of trained manpower required by business in its service area, which includes not only initial training but the retraining of local citizens and the upgrading of their current skills. The College also sees itself as the provider of curriculums which are parallel to the first two years of a baccalaureate degree. The provision of opportunities for persons to take special courses to prepare them for college-level work, through the development of their basic mathematics, English, and science skills and concepts, is considered also to be an important function of the College--in short to create opportunities for those able to learn, but who currently lack the educational rudiments necessary to benefit from post-secondary training. Yet another function of the College, and an important adjunct to the College's primary function of educating students through formal course work related to specific curriculums, is the institutional role in community service. This particular function includes the offering of a variety of activities ranging from job specific workshops to personal interest, non-credit courses and cultural programs.

The general population in the community holds a perception of the College mission consistent with the express purposes set forth by the institution itself. The training of students for immediate employment, that is, the occupational aspect of the College's educational efforts is the most frequently identified purpose by the area citizens. Although a number of the local citizens recognize the College as multi-purposed, nearly all citizens identify one of the institution's purposes as the provision of training and skill development useful for the student to obtain immediate employment. This purpose is closely followed, in frequency of commonly held perceptions, by a function which is directly related to occupational training, namely the upgrading of a student's current job skills. Often linked to upgrading current job skills, in the minds of the citizens, is the College's provision of educational opportunities for adults beyond the normal college age. Service to these adults may be in the form of retraining for new types of occupations as well as the upgrading of current skills related to a person's present job. Clearly the public view of the College is in line with the institution's mission which places its principal programmatic emphasis on occupational and technical education. Some ninety percent of the citizens believe the College is directing its efforts toward this end.

TABLE 6
Perceptions by Local Residents of the Role
of J. Sargeant Reynolds Community College

Role	Percent of Respondents Checking this Category
To offer courses and programs which provide students with training and skills useful in getting a job.	94
To provide education to upgrade current job skills.	88
To provide educational opportunities for adults beyond the normal college age.	83
To provide two years of regular college work for students planning to transfer to a four-year college.	69
To provide a source of trained manpower for area employers.	67
To provide community services such as workshops, cultural programs and personal interest, non-credit courses.	61
To offer special courses for persons not ready to begin college level work.	50
To keep young people out of the labor market for two years.	1

Other purposes of the College as perceived by the general public clearly are not as consistently understood as are the occupational and technical training opportunities offered by the College. As for the College's recognition that transfer programs must be available at the institution in a sufficient number of academic areas as to not unduly limit student choices for a baccalaureate degree, approximately 70 percent of the citizens associate the preparation of students for transfer to a four-year institution as a function of the College. Some 60 percent of the residents identify community service as a function of the College including activities related to professional as well as personal development.

Half of the service area citizens believe one of the College purposes is provision of special courses to assist those persons who need further development of their basic language, mathematics and science skills to enable them to take college-level work. Related to this concept of offering courses preparatory to taking college-level work is yet another attitude measure from the local residents as to the role of the College. Just under one-third of the citizens hold the belief that one of the College functions is to offer educational opportunities to those students who are unable to get into another college or university. It is interesting to note that the idea that one of the College purposes is to offer special programs and opportunities to those who are less academically able is considerably less frequently held by local citizenry than is its role to offer academic programs and services which prepare students with the skills necessary for immediate employment or with the training required for entry into a baccalaureate program.

A particularly significant finding from the College study of community perceptions of the purpose of the institution concerns its role in providing trained manpower for local employers. The preemininent attitudes of the citizenry are related to what the College can do for individuals rather than what it can do for business and industry. The role of providing courses and programs which enable citizens of all ages to get or to maintain their jobs and of offering curricular programs which prepare students for transfer is a much more prevalently held perception in the community than is the College role of supplying trained manpower for the Community. One-third of the general population does not think of the College in terms of service to local businesses and industry in spite of the fact that the needs of employers should impact directly on the programmatic structure of the College.

In the broad context, institutions of higher education do have a role to play in shaping of society which is independent of influences from business and industrial leaders and government officials--an expression of the notion of separation of colleges from other forces of society to preserve educational integrity and purpose. But in the narrower context of the community college, programmatic design must be significantly influenced by employer needs for at least two very important reasons. A good supply of trained manpower improves the economy of the region and the general well-being of its citizens. Additionally, a correlation between curricular offerings and employer needs translates to improved placement opportunities for community college graduates. The Chairman of the State Board for Community Colleges has emphasized this fact. Chairman Francis T. West, speaking at the Board's 1983 Annual Meeting, stated:

> If job training is the great strength of the community colleges, our greatest weakness is failure to work closer with Virginia's existing industries to determine their employment and training needs. . . .Whatever we can do to keep Virginia's economy flourishing, we must do.

Community Leaders' Perceptions of the College

Up to this point the discussion of the community's perception of the role of J. Sargeant Reynolds Community College has been based on the results of a general survey of local residents. The interviews with business, civic and government leaders reveal that among this particular group of citizens there is a considerably greater concern for the College as a supplier of trained manpower. This is not to say that other societal benefits associated with the community college are not considered by the local leadership, but simply that there is a shift in emphasis relative to the various roles of the College from that held by the general population. The interviews with community leaders also reveal that these persons are considerably more knowledgeable than the general population relative to what the College is currently doing to serve the community, despite a quite good level of awareness among this latter group. Nearly 90 percent of the community leaders have some knowledge of the specific purposes of the College. Of this group, the government officials, including those in elected office, have the highest level of understanding of the role of the College.

Opinions as to the level of the College's success in carrying out its present mission also vary between the general population and the local leadership. Here again the community leaders give higher marks to the College than does the general citizenry. Eighty-seven percent of the local leadership believe the College to be at least adequately carrying out its mission compared to 71 percent for the population as a whole. When we move from the "adequate or better" assessment of the College's functioning to the single rating of "excellent" the difference between the two groups becomes much more dramatic, with three-quarters of the community leadership saying the College is doing an excellent job to one-third of the general population so responding. It should be noted that there is variation here among the leadership, with the business community less frequently assessing the College as doing an excellent job than do the government and civic groups. Sixty-five percent of the business leaders consider the College to be doing an excellent job; for those in government the figure is 77 percent.

Although the local leadership views the College in a very positive manner relative to its current operation, this in no way limits their concern for improved service to the community. By responding to the question of what should the various roles of the College be, these persons provide a wealth of valuable information for consideration by the chief administrators of the institution. For an organized presentation of the responses given by this group of more than 100 active government, civic, and business leaders, their observations have been categorized into topical areas. Collectively, the predominant views expressed in these areas must influence the College in the review of its broad mission as well as in the development of the specific means to fulfill this mission.

Occupational/Technical Training and Transfer Programs

It is clear that the local leadership supports the concept of the community college providing occupational and technical curriculums. In fact, there are those, albeit small in number, who believe that the College should do only this, to the exclusion of offering academic curriculums which are intended to parallel the first two years of baccalaureate programs offered by senior institutions. The concern here generally relates to two issues--the problem of duplication of efforts among the two- and four-year colleges and the question of trying to be all things to all people with only so many resources being available. From this group who would see the mission of the College limited to vocational education, the point is made for the College to concentrate on what it does best, namely the provision of occupational/technical curriculums, retraining opportunities, and job-related continuing education courses.

As noted, the number is small for those seeing no role for the two-year college in the area of transfer programs, but perhaps more significant is the fact that the transfer function is just not a major consideration for those in leadership positions in the community. Less than 15 percent of those interviewed even discussed this as a role for community colleges, either in a positive or negative sense. This compares with 70 percent of the general population holding the view that the offering of transfer programs is a role of the community college. Of those community leaders who have a concern for the issue of transfer education in the community colleges, two-to-one of them agree that transfer programs should be available to students enrolled in two-year colleges. But even among those who support such transfer programs there is a strong belief that the emphasis should be on preparing students for entry into baccalaureate programs where there is a manpower need for such training. These persons also stress the importance of articulation with four-year institutions to avoid loss of credit and most especially the requirement that students take appropriate mathematics and science necessary for entry into high technology programs at a four-year institution.

Regarding vocational education in two-year colleges, although strongly supported by local employers, there is a widespread concern about the current training being received and its value in the marketplace, especially in the case of businesses associated with changing technologies. The issue relates to the question of how transferrable is the knowledge acquired in a two-year college program to the new technological advances which are appearing at a rapid pace. Over and over again industry and business leaders, particularly in the computer, electronics, and communications fields stress the need for instruction in the fundamental concepts of the technology and less effort directed toward developing skills for a specific job. The end result they claim will be the development of a person who can more effectively adjust to change. As one businessman stated, "Get away from just teaching skills; put instruction in the context of change to avoid having change take on the nature of a hostile environment."

This philosophy of instruction with more emphasis on the broad fundamental concepts than on skills for quite specific jobs is supported by a recent study by the Southern Regional Education Board, entitled Technician Manpower in the South. The study asserts:

> Two-year postsecondary institutions are strongly advised to provide broad-based generic programs in the basic technologies, allowing for an individual's adaptation across a wide range of occupational applications, rather than aiming at a proliferation of inordinately specialized programs.[1]

This stress on fundamentals appears to have two advantages for community college graduates. First, the student who begins a career immediately upon graduation will become a more valued employee and should have a better opportunity for continued employment success. Secondly, for those students who intend to further their education, the greater curricular emphasis on fundamental concepts than on specific skills will put them in a better position to proceed through a baccalaureate program. But it must be noted that this approach places added responsibilities on employers. For those employers who hire graduates of community college programs which emphasized the development of a good conceptual foundation, at the expense of some skill development, there is a responsibility on their parts for adherence to an attitude of in-house training for new employees relative to the specifics of their industry--their equipment, their product, their systems. Specialized training required by particular industries and businesses becomes more of a function of the individual companies.

One additional outcome from the development of vocational programs which stress the fundamental concepts is a reduction in the degree of distinction between vocational and transfer programs. By altering the philosophy that vocational programs must be first and foremost skill development, many programs may serve both the student who wishes to enter the work force upon leaving the two-year college and the one who desires to continue his education at a senior institution. If the College accepts this philosophy of increased emphasis on concepts, the task for its academic planners is the review of curriculums to ensure an appropriate mix of concepts and skills consistent with the needs of employers and the academic interests of the students.

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[1] Winfred L. Godwin, Foreward to Technician Manpower in the South, by Eva C. Galambos (Atlanta: Southern Regional Education Board, 1983).

Greater emphasis on conceptual development carries a particularly pragmatic implication for the College. For many programs, specialized skill development is only as useful as the degree to which the equipment is considered state-of-the-art. It is less demanding upon College resources to incorporate, into curriculums, instruction in the latest concepts of particular technologies than it is to maintain vast configurations of specialized equipment at the level of state-of-the-art.

A significant number of business and industrial leaders strongly recommend that cooperative education be built into the occupational/technical programs offered by the College. Cooperative education combines periods of classroom instruction with periods of off-campus, work experiences related to the students' field of study. This arrangement is particularly important for those curriculums where some training on the latest equipment is essential but is not possible on the campus sites. But even beyond this, for those programs where state-of-the-art equipment is not a factor, on-the-job training, through cooperative arrangements between businesses and the colleges, provide the student with experiences not available in the classroom. It is also suggested by the business community that cooperative education can provide a portion of the skills training presently being offered at the College and leave more classroom time for the development of fundamental concepts.

Cooperative education transforms vocational education into a partnership between the community college and business. Most business leaders see education as a vital part of occupational and technical education. A potential benefit for the business community is reduced expenditures for in-house training of recent graduates. The caveat which some businessmen express is that cooperative education cannot be considered as charity by colleges. It should be a joint venture which requires college resources as well as those of industry. Only if the colleges dedicate sufficient resources for the maintenance of such a program should this approach to education be employed.

Services to the Adult Learner

As we have seen, the provision of educational opportunities for persons who are not recent high school graduates ranks very high among the general population as one of the purposes of J. Sargeant Reynolds Community College. Likewise, the local leadership considers this to be a vital function of the College. One businessman has stated that the needs of our adult population appear to have the greatest potential for services rendered by community colleges. Service to these persons falls into several categories, namely retraining, upgrading of existing skills, recertification, and initial training for those embarking on a career for the first time.

Retraining covers the gamut of possible opportunities for students, from moving the unskilled, displaced worker into the field of skilled workers to providing college or university graduates with more marketable skills. For those adults not desiring to change their current field of work but experiencing the effects of changing technology within their jobs, the community college can enhance or upgrade their existing qualifications. Retraining, or the formal upgrading of current skills, provides a vehicle for the smooth transition for the mature workers who are threatened by changing technology.

For those adults desiring to enter the work force for the first time, the community college offers these persons initial training for jobs in a wide variety of fields. It is a commonly held belief among the local leadership that the community college offers these adults a smoother transition into the preparation for a career than might be the case in a four-year institution, even for those who desire to transfer later to a four-year college or university.

According to his need, the adult learner may select to enroll in special seminars or workshops or in selected full-length courses, or to matriculate into a curriculum. For those who are desiring to upgrade their qualifications or are seeking recertification, the learning experience may be accomplished through seminars, workshops, and special courses which address the advances in particular occupational fields. These specialized vocational opportunities are considered by the community leadership to be an important mechanism for maintaining a supply of well-trained local manpower. The business community frequently singles out the College's Center for Office Development as a provider of a significant service in the area of office automation through its short-term, intensive training programs. Educational opportunities offered through the College's association with the American Institute of Banking are also considered by many in the financial industry to be a service to their employees and a benefit to their firms.

It is important to note that the provision of these services to the adult learner for the enhancement of his existing knowledge or skills is a role the College can successfully carry out only if it has the resources to maintain the staff and equipment at a level of sophistication consistent with current technology and business practices. This is a pervasive concern among community leaders. It is, however, unrealistic to assume that the community college can provide on its own all the necessary state-of-the-art resources necessary to keep local technicians in agriculture, business, electronics/engineering, and the health sciences current in their fields. What the community colleges can do is be the broker for much of this specialized training, working in partnership with business and industry in a cooperative arrangement. Further discussion of this is covered in the chapter, entitled Partnership with Business and Industry.

Let us look briefly at the adult learners who are changing careers or who are attempting to enter into a career for the first time. For the most part their educational needs go beyond specialized seminars, workshops, and a few selected courses. These persons may be displaced workers whose present training is no longer marketable, individuals whose occupational interests have changed, or women who have delayed entering the work force. For a large portion of these persons, adult education takes the form of matriculation into a formal curriculum. Among this group, there are those who are able to begin a program with advanced standing because of previous college work; at the other extreme are those who are so poorly prepared for college work as to require extensive remediation in their basic educational skills prior to entering a curriculum.

The training of persons possessing very poor basic educational skills is not deemed by either the general population or the community leadership to be among the higher priority roles for the community college. Whether this is because of the lack of serious consideration given to the issue or a definite belief that this is not a function of the two-year college is unclear from this study. The facts from the study are that only half of the citizens completed the mailed survey selected "the offering of special courses for persons not ready to begin college-level work" as one of the purposes of J. Sargeant Reynolds Community College. Furthermore, only one of the community leaders, when asked to describe the role of the community college, specifically identified remediation for the academically ill-prepared as one of its functions. This person associated remediation with what he believed to be an important role of the College--the retraining of semi-skilled workers, with minimal education, who have been displaced by the introduction of modern technology. No other business leaders in the study considered retraining in relation to any kind of extensive remediation programs.

While the local leadership strongly believe that the community college has a significant role in the area of retraining, it is apparent that their attention to retraining is not directed toward possible situations where extensive remediation might be required. This could be simply an omission, but perhaps is the result of a conscious understanding of the local economy and the belief that technological changes will not create an immediate need for the retraining of large numbers of academically deficient individuals. There are substantial reasons why the latter assumption may be valid.

Because of the diverse economy in our community, the overall effect of changes in technology on the work force will be less dramatic in magnitude than in regions which are primarily single-industry dependent. In the Richmond area, there will be for some time to come a relatively steady need by various industries for retraining and enhancement of existing skills. Responsible government and business leaders suggest the creation of regional strategies, developed in consort by industry, government, and the colleges, to effectively handle the requirements of the employees and employers experiencing a change from the traditional modes of operating within business and industry. In many cases the disruptions caused by changing technology can be solved in relatively short order through the careful structuring of educational programs by the local community college. But continued monitoring must take place among the community leadership to be alert to any significant displacement of minimally trained workers and strategies developed for accommodating the retraining of these persons. Consideration must be given as to whether or not the community college has a role to play in this particular situation.

Basic Skills Development

Among the local leadership there is a united front regarding the role of the community college to ensure that its graduates are proficient in the basic literacy skills of reading, writing, verbal communications and simple computations. A significant number of the community businessmen believe that this role may not be receiving adequate attention in the two-year colleges, that the vocational skills development frequently precludes the development of basic communication and computational skills.

This attitude poses somewhat of a dilemma for the College, for the reports received each year from employers of J. Sargeant Reynolds graduates do not reflect any serious problems with their basic skills. On a three-point scale where 3 = More Than Adequate, 2 = Adequate, and 1 = Less Than Adequate, JSRCC 1981-82 graduates received average scores of 2.19 on communication skills and 2.23 on computational skills. The issue here may be that immediate supervisors generally complete the graduate assessment forms and consider these skills to be adequate for the entry level jobs held by the new graduates. On the other hand, the top executives view the requirements for proficiency in the basic skills from the perspective of continued value of the employee to the company. Do his basic literacy skills warrant advancement in the company? Can he assume supervisory responsibilities? These, of course, are important considerations for the graduate as well. It is in the best interest of the employer and employee that the basic skills of the employee are sufficiently well developed to allow for promotion and the addition of more responsibilities within the organization.

Several of those persons interviewed during the course of this study stressed the importance of achieving a higher level of common competence for graduates of all programs offered by the College, transfer as well as technical. Rather than a direct indictment of this particular college, this general admonition was directed more toward a perceived problem throughout all of higher education. However, when specifics were offered by the local leaders interviewed, these were directed toward the training provided in the occupational and technical programs and the occurrence of a disproportionate amount of time allocated to technical skill development versus communication and simple computational skills development. Electronics and data processing curriculums are two cases in point. Business leaders associated with these fields emphasized the need for greater curricular emphasis on the fundamental skills in mathematics and written and spoken English. For the electronics graduate who works as a service representative, the inability to communicate effectively with the public is considered to be a serious liability. The programmer with only limited computational skills is destined to remain in an entry level position, according to management in the computer field.

Role of the College in Community Service

The community service function of colleges normally relates to cultural and educational opportunities provided for citizens of the region. These activities supplement the regular instructional program offered by the institution and, in the specific case of J. Sargeant Reynolds Community College, they carry no college credit. Results from the survey of the general population indicate that 61 percent of the people consider community service as one of the purposes of the College. Considering that 94 percent of these same people hold that the provision of courses and programs to train students for jobs is a College purpose, community service does not rank particularly high among the citizenry as a role for the institution. There appears to be a direct correlation between the degree of frequency of selected roles of the College by the general population and the amount of College support allotted to these roles.

Although a number of community service activities are offered by the College each year, this effort utilizes only a minimal amount of the institution's resources compared to those delegated to the support of formal academic programs. Community service activities may be classified in three broad categories:

(a) seminars and workshops for the improvement of occupational skills and knowledge,

(b) cultural or civic programs open to the community residents, and

(c) personal interest or avocational courses of instruction.

When asked to describe what they believe to be the role of the community college; 30 percent of the community leaders participating in this study cited specific activities which could be considered as falling in the category of community service. Of these activities, two-thirds of those mentioned were associated with the improvement of occupational skills or the advancement knowledge offered through short-term workshops or seminars at the College or at work sites. Specific types of workshops identified included staff development for office workers, management development for mid- and top-management personnel and special topics in technical areas to keep employees abreast of changing technologies. The health field was identified in the study as an area in which technical seminars would be particularly appropriate and would be welcomed in the community. This input came not only from a large professional health association, but from entrepreneurs in the health services sectors, such as dental laboratories.

Although not all types of suggested workshop offerings can be covered here, two additional ones are noteworthy for consideration by the community services personnel at the College. Interest was expressed by representatives of small business in short-term seminars on computer applications. In-house assistance is not generally available in these types of enterprises. Writing skills workshops for managers and supervisors were also suggested by several of the business leaders interviewed. As mentioned earlier in this chapter, there is particular concern among executives about the writing abilities of their employees.

Apart from job-related seminars and workshops, there were comments made relating to the cultural and civic needs of the community and the role the College could play in response to these needs. Predominate among these were the suggestions that the College could provide a significant service by instituting a series of community forums on local issues. Several businessmen stressed the need for diminishing racial polarization in the community and believed that, among other things the College might do to alleviate this problem, the development of issues forums would be an effective way of dealing with this problem. Generally, the nature of community forums would be for the College to assist in the identification of significant citizen concerns and provide a meeting place for open forums to address these issues. Associated with this idea of the College playing a role in promoting harmony in the community was the suggestion that the institution should increase its efforts in offering programs and events that encourage the understanding and acceptance of cultural diversity.

It should not go unmentioned that the civic leaders who were interviewed saw the College, both its personnel and its facilities, as a valuable resource for non-profit service organizations--the staff to lend their services and expertise to the enhancement of the functions of these bodies, and the facilities for use as meeting locations by these associations or agencies where needed. It was also suggested that the College continue to make available to the community its services in career counseling and the provision of workshops on how to apply for a job.

In summary, the local leadership recognizes the College as a significant resource in the community, not only as an instrument for providing formal instruction, but as a support for special needs and conditions present in the locality. It is obvious that the community leaders view the College as a good neighbor, ready, willing, and able to be of service to the residents of the area. It is noteworthy that the third category of community services listed above, namely the offering of avocational courses, was not cited by the community leaders as a role for the College to engage in, although the College has considered this to be a part of this function. The fact that no mention was made of avocational offerings cannot be assumed to be a rejection of this type of service, but it should be noted it is in this area that certain State legislators have concerns as to the appropriateness of these activities.

Chapter V

OCCUPATIONS OF THE FUTURE

The United States Bureau of Labor Statistics has reported that "by 1990, the size of the labor force is expected to range from 122 to 128 million persons--a projected increase of 17 to 22 percent over the 1980 level."[1] In examining the quantity and nature of jobs in the future it is imperative to first recognize that society is undergoing a massive and dramatic technological revolution. Rapid developments in science, technology and computer applications have already transformed the job market in nearly every sector of the American economy. Automation in the factories, farms, and offices is rapidly altering requisite skills for many occupations. It is safe to predict that the full impact of this revolution has not yet occurred. Indeed the pace and scope of change is far more likely to accelerate in the future.

The American economy is rapidly changing from being highly dependent upon manufacturing to being much more dependent upon nonmanufacturing industries. The fastest growing economic sector is that of services (health care, food service, legal services, banking, insurance, computer software development, wholesale and retail trade, etc.). Economist Lester Thurow notes that between 1977 and 1982 the service sector accounted for 62 percent of employment growth in the private economy, a dramatic growth rate which he points out is not sustainable in the future.[2] Indeed, the consequences of this phenomenon lie in the degree to which the output from the manufacturing sector is large enough to support the developing service industries.[3] It is widely recognized that the service industries can continue to expand in this country only so long as its manufacturing output increases through improved productivity rates and a recapturing of a large portion of the nation's lost status in the world manufacturing market.

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[1] U. S. Department of Labor, Bureau of Labor Statistics, Tomorrows Jobs (Washington, D.C.: Government Printing Office, 1982), p. 3. (Range is based on varying assumptions of economic activity and governmental expenditure.)

[2] Lester C. Thurow, "A Non-Industrial Revolution", Newsweek, January 9, 1984, p. 79.

A prosperous economy is thus dependent upon a balance between the manufacturing and nonmanufacturing sectors of our economy. Planning takes on increased importance as developments in these areas progress. A highly skilled work force is a requisite for both sectors of the economy. Persons with the technical skills necessary to improve our manufacturing capability must be available and individuals trained in the service industries must be in large enough supply to meet the challenges of the expanding manufacturing sector. When exploring potential alterations to the job market and the subsequent training which must be provided by the College, it is important to remember that curriculums must address the needs of all sectors of the economy.

Along with these changes are other trends which influence both the job market and society. Factors such as the maturation of the population, the influx of women into the workplace and alterations in lifestyles must also be considered when examining the employment needs of the future. While estimating the probable influence of these factors is far from an exact science, any attempt to project job trends based purely on the past is folly. Given this premise, the task of preparing individuals with job-related skills which will meet the future needs of employees becomes as difficult as it is vital. To arrive at a realistic, research-based

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[3] The Job Skills Task Force, Meeting Future Job Skills Requirements in Tennessee: A Report to Governor Lamar Alexander ([N.P.]: December, 1982), p. 8.

prognostication of both jobs and requisite skills for the next several years, the College engaged in an extensive study, the results of which are described here. Interviews were conducted by College staff with leaders from various segments of government, the business community and community organizations to more accurately determine these trends and their impact. Additionally, in the preparation of this report extensive use was made of recent research studies conducted by federal and state governments and by private organizations.

The Influence of Technology

The most widely recognized influence on the job market is that of technological advances. All segments of employers, from farmers to bankers, merchants to health care professionals and manufacturers, recognize the importance of technological advances and computer applications. As for manufacturing, the National Science Foundation reports that the annual employment growth, from 1977-1980, for scientists (including computer systems analysts), engineers, and technicians in manufacturing exceeded that of total manufacturing employment by 6% versus 1%.[4] Changes in staffing patterns within industries account for a major portion of these increases in science, engineering and technician employment demand, as industry directs its attention to improvements in productivity, quality, and market position. Although this increased proportion of scientists, engineers, and technicians in the manufacturing industry is also due to alterations in product demand which benefit new high tech industries, these latter industries in 1980 accounted for only 4.6% of total wage and salary worker employment nationally.[5]

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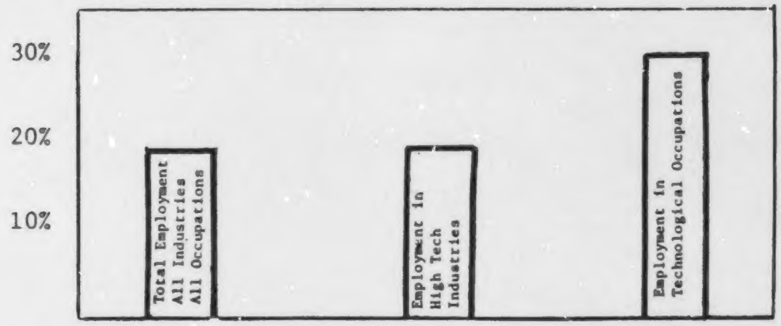
[4] National Science Foundation, "Manufacturing Employment Becomes Increasingly Technological," Science Resources Studies Highlights NSF 83-303 (Washington, D.C., March 19, 1983), p. 1.

[5] Eva C. Galambos, Technician Manpower in the South (Atlanta: Southern Regional Education Board, 1983), p. 2.

These trends observed by the National Science Foundation for the period 1977-1986 are expected to continue through 1990. Employment projections by the Bureau of Labor Statistics indicate that, while the employment growth rate in high tech industries from 1980-1990 will not exceed that for all of industry, the increase in the number of technological occupations will greatly exceed the growth rate of industrial employment (see Figure 2). All of this is being said to emphasize the pervasiveness of technology in all types of industries--in 1980 only one-fifth of the persons employed in high tech occupations worked in high tech industries.[6]

FIGURE 2
Projected Employment Growth
United States, 1980-1990



Source: U. S. Bureau of Labor Statistics unpublished preliminary report to the Joint Economic Committee, August 2, 1982, cited by Eva C. Galambos, *Technician Manpower in the South* (Atlanta: Southern Regional Education Board, 1983) p. 3.

The reality is that all industries, including those which have been around a long time, such as the auto, steel, and apparel industries, will be utilizing more technicians to assist in the design of and to maintain and operate sophisticated electronic equipment. Industrial modernization is the only way American manufacturing can continue to compete in the world market. The application of computer aided design and computer aided manufacturing (CAD/CAM) to improve productivity is becoming pervasive.

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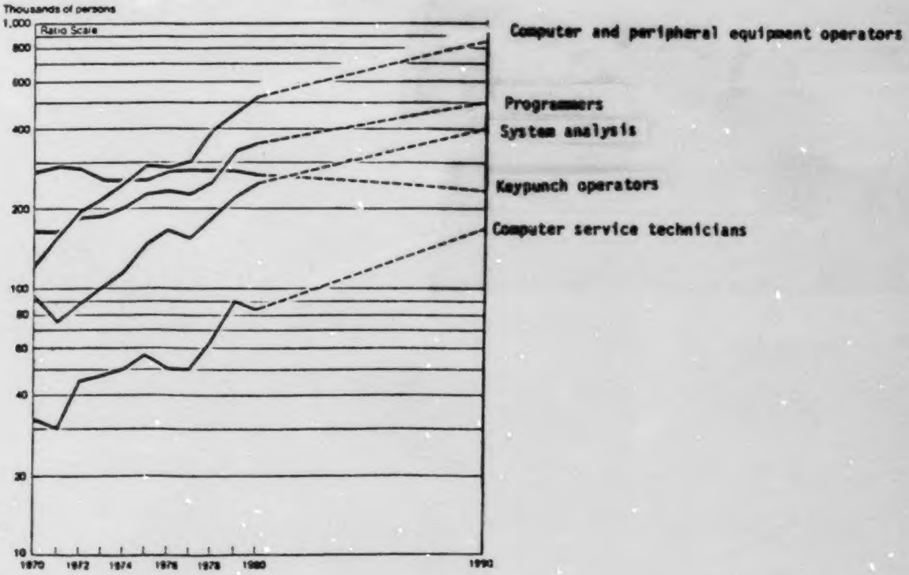
[6] Ibid.

It is not surprising that 60 percent of the community leaders interviewed and 90 percent of the general population surveyed for this study, when asked to identify present and future high demand jobs for the Richmond area, named occupations related directly or indirectly to advanced technology--directly in the sense of a specialist and indirectly as a user of the applications of new technology. As an example, specialists in the computer area such as systems analysts, computer programmers, data entry personnel and computer operators are in high demand. On the other hand, in the office there is a growing need for people who are skilled in the use of word processors and minicomputers equipped with job-specific software.

FIGURE 3
National Employment of Computer Workers
by Occupation, 1970-1980 and Projected 1990



Source: U.S. Department of Labor,
Bureau of Labor Statistics, Employment Trends in Computer Occupations Bulletin 2101
(Washington, D.C.: U. S. Government Printing
Office, October 1981), p. 19.

The Merger of Traditional Skills and Electronic Equipment Usage Skills

While skills in computer usage are highly valued, it is important to note that very frequently employers are looking for people who can apply these skills to another specific area of expertise or knowledge. Often skills in the use of electronic equipment are not perceived as ends in themselves but rather as a means of enhancing other job functions. Employers are interested, for example, in managers who are familiar with and able to use a computer and various software to perform more effectively, a secretary who is proficient in word processing and data entry, or an accountant who can explain to a programmer, in terms of logic, just how a computerized accounting system should be set up. Thus, the ability to work with a computer and associated technology will be important in the future almost regardless of occupation. Indeed, nearly three of every four of the community leaders interviewed indicated that some level of knowledge relative to the applications of computers and other electronic equipment would be required or beneficial for employees in the future.

The trend toward employing persons with skills in more than one area is likely to continue. Even in an occupation such as computer programmer, which is generally perceived to be in the mainstream of the high technology society, there is concern regarding the value of an employee with skills limited to the computer. Certainly the general proliferation of computers and computer applications has created a demand for programmers which will continue to expand in the future. However, those in the computer field warn that the general knowledge and education required of computer programmers in the future will be greater than that required for entry level programmers of today. The future employment trend will be toward hiring persons who have strong analytical, managerial skills and an educational background not limited to computers. It is interesting to note, that while computer and other electronic equipment skills are valued by employers in the general economy, those persons interviewed from computer-related businesses are looking for people who are able to adapt computer concepts to address problems arising in a variety of businesses and industries.

Demand for Manufacturing, Maintenance and Repair Technicians

Concurrent with the rapid diffusion of computer and other technological advances and applications is the growing need for persons who are capable of assembling, repairing and maintaining such systems. For example, the National Occupational Employment Statistics Survey-Based Occupational Projections indicate that the number of data processing machine mechanics will double between 1980 and 1990.[7]

As stated previously, the general ability to work with developed technology and systems will be necessary or beneficial in almost all occupations in the future. Beyond this general knowledge, however, is the growing need to have highly skilled technicians who are capable of assembling, maintaining and repairing the systems. A recent study by the National Science Foundation regarding projected employment needs in selected engineering and computer specialties noted the potential shortage of people to fill technician positions. The report goes on to state, "In both Electrical/Electronic and Mechanical Engineering Technician occupations, growth rate in employment over the next five years are projected to exceed those noted in the recent past."[8] Considering the low rate of growth in the past, the report notes, "If low employment growth was the result of an inadequate supply of such personnel, accelerated growth in demand projected for the next five years may exacerbate an existing shortage situation."[9] Based upon the interviews conducted for this study, the exacerbation of an existing shortage is taking place in the College service area. In addition to the existing demand, the need for electronic and mechanical engineering technicians will grow as new technology is developed. As noted in a report by the Southern Regional Education Board, ". . . [T]here are indications that some developing technologies are on the verge of pervasive uses and thus will create expanded demands for high technology manpower."[10]

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[7] "National OES Survey-Based Occupational Projections, 1980-1990", in Virginia Occupational Demand, Supply and Wage Information (Charlottesville: The Tayloe Murphy Institute, 1983), p. 373.

The development of new technologies will also greatly expand the potential for automation. The establishment of automated bank tellers and sophisticated manufacturing equipment to increase productivity are but two of the more obvious examples of this application of technology. It is anticipated that this trend will continue in the future. For example, shoppers will be provided banking and financial services through automated tellers located in retail stores. Such a trend will have two effects on employment. First, personnel who had previously provided this service will be displaced. Second, the need for people able to maintain and repair these systems will expand.

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[8] National Science Foundation, "Projected Employment Scenarios Show Possible Shortages in Some Engineering and Computer Specialties," Science Resources Studies Highlights NSF 83-307 (Washington D.C.: February 23, 1983), p. 5.

[9] Ibid.

[10] Eva C. Galambos, Engineering and High Technology Manpower Shortages (Atlanta: Southern Regional Education Board, 1980), p. 14.

It should be noted that despite the large and increasing demand for highly skilled technicians, the College must proceed with caution in any expansion of its curricular offerings in these areas. The nature of the developments which have created this demand is, very often, highly specialized. Employers seek personnel who are able to work with equipment and systems which are specific to their particular business or industry. This situation provides two difficult options for the College in training people to meet the needs of employers. First, the College may provide students with a general technical background, which covers the fundamental concepts required of the particular discipline but does not prepare the student to meet the employers' immediate needs for specialized training. Secondly, the College may attempt to provide specialized training in a variety of areas, thereby running the possible risk of exhausting its training resources before meeting the needs of but a very few businesses or industries. For this reason the College must work very closely with a variety of businesses and industries when expanding its technician training to achieve maximum results. Even in the case of generic programs, modern technology requires that the College maintain facilities and equipment that are consistent with current advances. The College, through cooperative arrangements with business and industry, can minimize its expenditures for facilities and equipment and at the same time provide the students with some opportunities for specialization by placing them at specific industrial and business sites for part of their training.

The Influence of an Aging Population

Another trend in society which is influencing employment is the aging of the population. The Bureau of Labor Statistics reports that by 1990, nearly one-third of the population will be between 25 and 44 years of age and that the number of people 65 and over will grow significantly.[11] This trend will have its greatest impact in health related fields, most specifically in the area of geriatrics. As the population ages a variety of services will be required. According to interviews conducted in this study the nursing home industry is expected to grow through the 1980's, although not at the pace maintained in the previous decade. However, the growth in fields associated with geriatrics will not be limited to nursing homes. Hospitals and hospices will be expanding their geriatric services to provide for the needs of the elderly. This growth picture for all types of geriatric care indicates at least a sustained, and perhaps an increased demand for nurses and nurses aids in the field of geriatrics as well as other associated occupations such as activity coordinators, occupational therapists and counselors, dietitians, recreational leaders and physical therapists.

In addition to providing trained manpower to meet the personnel requirements of employers, the College must also consider the impact of the maturation of the local population on its own community and student services and program mix. As John Gribbin points out in his book _Future Worlds_, educational institutions will serve at least two important roles in the future: (1) provide the training and education necessary to secure employment and, equally important, the retraining and re-education needed by employees to remain current in the rapidly developing workplace and; (2) provide programs which meet the need for constructive and satisfying leisure activities.[12] Each of these roles may be expected to expand as the concept of "lifelong learning" is applied to the large numbers of mature persons expected in the future.

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[11] U.S. Department of Labor, _Tomorrows Jobs_, p. 2.

General Trends in Health Care

Apart from health care specifically for the older population, other segments of the health field are expected to be affected by social, as well as technological trends. One such segment is that of home health care. Medical trends toward such practices as outpatient surgery and shortened hospital stays, coupled with the increasing number of people who choose to stay at home rather than in a hospital, are creating a growing demand for nurses and health care workers who are able to provide medical services in the home. Associated with this trend is the increasing need for people who provide general services in the home such as cooks, housekeepers, and semi-professional health care workers. As this trend develops the level of required skills and subsequent compensation for this type of work will increase.

An additional trend which will have an impact on the health field relates to changes in personal habits. As society becomes more concerned with and aware of health hazards in their lifestyle (for example, smoking, inappropriate diet or exercise) and more individuals take measures to counter these harmful influences, a healthier population will result. The trend toward increased personal responsibility for the maintenance of health and preventive medicine is growing and will lead to expanded interest in such areas as health food centers, self help and preventive medicine, and athletic activities. As a consequence of this, there will be an increasing demand for preventive medicine and health care specialists. Television will play a significant role in serving this interest. The popularity of such TV programming as the "Twenty Minute Workout," and Cable Health Network already attests to the growth of concern for health maintenance. Diet and exercise centers will be increasingly utilized by the general population. This trend is so significant that it has been identified as a substantial component of the societal shift from institutional help to self help described by social forecaster John Naisbitt in his book Megatrends.[13] As it continues this trend may well affect corporate pension and health care plans of the future and may influence employers to provide physical activity for employees in the workplace and encourage their participation. Should such an employee benefit become the norm, activity directors may become a standard part of the corporate structure.

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[12] John Gribbin, Future Worlds (New York: Plennum Press, 1981), p. 203.

As can be seen from the discussion of the preceding trends, factors which influence health care have an impact on many other occupational areas. Personal health is no longer viewed as the exclusive domain of medical specialists; but is increasingly perceived to be influenced by a large array of occupations related to all aspects of life. In addition, industries such as the tobacco industry which produce known health hazards have entered an era of decline from which they are not likely to rebound. Persons in occupations which are involved in the manufacture of such products are prime candidates for retraining.

The Impact of Medical Advances on Health Care Occupations

Perhaps in no other area has scientific research, development and application had a greater impact than in the area of health care. Developments in these areas have dramatically transformed society at a rate which is likely to accelerate in the future. As noted by futurists Marvin Cetron and Thomas O'Toole, in their book Encounters with the Future:

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[13] John Naisbitt, Megatrends (New York: Warner Books, 1982), p. 203.

> The fast pace set in the first two-thirds of the 20th century for new cures and treatments will be hard to sustain but it will be done and even stepped up in fields like brain research, which are only now beginning to catch fire. So rapid will be the pace that children born today can expect to live for 83 years, 10 years more than their parents and 20 years more than their grandparents and 30 years more than their great-grandparents.[14]

Developments such as these will continue to alter various fields of the health care profession. Increased specialization and the subsequent need for more sophisticated skills are likely to alter the employment market in health care. For this reason, the interviews conducted in this study indicate that employment in many areas of the health field may be characterized by an accelerating demand for very highly skilled personnel. Occupations such as Optician, Medical Laboratory Technician, Dental Laboratory Technician, Medical Assistant, and Respiratory Therapist may be relatively closed to those with less than the highest degree of competency and sophisticated skills. However, those possessing these qualifications will be in demand. It should be noted that, of the fastest growing occupations described in the Occupational Outlook Handbook, over 50 percent are found in health and related fields.[15] There also appears to be a demand for highly qualified medical administrators and medical records personnel in the College service area.

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[14] Marvin Cetron and Thomas O'Toole, Encounters with the Future (New York: McGraw-Hill, 1982), p. 47.

[15] U. S. Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook (Washington, D.C.: U. S. Government Printing Office, 1982).

In addition to increasing the sophistication and expertise required in established occupations, medical research, and its application have precipitated the evolution of many new health careers. A variety of new occupations are frequently established as new technologies are presented, applied and refined in the field. This trend is the focus of a recent article in the Occupational Outlook Quarterly which discusses the establishment of new occupations in such fields as Radiation Therapy, Sonographic Diagnosis, Nuclear Medicine, Cardiology, and Biomedical Equipment. It is significant to note that, while formal training programs are favored for new occupations, generally the training in emerging fields is provided on the job. Certification, and licensure requirements as well as training standards are frequently developed after the occupation is established.[16] The emergence of unanticipated specializations as a result of medical advances is all but certain to accelerate in the future. The College must continue to work closely with local health care providers and other educational institutions if an effective means of responding to these often costly training needs is to be found.

From the results of the College survey of its citizens, it is clear that the local population believes that there is a high demand for personnel in the health related fields. Health related occupations were identified by the general population as second only to occupations in the computer field in terms of the jobs expected to be in highest demand during the next five years. Health Services ranked in the top five curricular areas of interest by those citizens who plan to attend the College, with a particularly high interest among high school seniors.

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[16] Gail M. Martin, "Medical Technology of the 1980's: Giving Birth to New Health Careers," Occupational Outlook Quarterly, Winter, 1983, pp. 3-14.

Employment in Skilled Trade Occupations

There will generally not be a great demand for persons in the skilled trade areas, especially those related to construction. This fact appears to be recognized by the community as our survey indicates that only 9 percent of persons surveyed felt that skilled tradesmen and mechanics would be in demand over the next five years. Many who are self-employed in the construction field (i.e., subcontractors) will need training in business and management if their businesses are to survive. It appears that, among the skilled trades, electricians will be in the greatest demand; however, it should be noted that residential and commercial electricians will be in relatively low demand while demand for industrial electricians, who are knowledgeable in the state-of-the-art, will continue to be very high.

The potential impact of developing technology and foreign competition tends to obscure the future demand for certain highly skilled trade occupations. One such position is that of estimator. The importance of this position to construction and production industries cannot be overstated. However, the impact of the application of computers to cost analysis renders the future of this occupation questionable. Another trade occupation for which demand in the service area is difficult to estimate is that of machinist and other such highly skilled mechanical craftsmen. As the recovery continues, the demand for these tradesmen in manufacturing is certain to increase. The Southern Regional Education Board reports that the potential shortage of machinists is not restricted to the midwestern United States and notes that the future demand for machinists is likely to exceed supply in the southern region. However, this same report notes that, of the 11 southern states for which data is available, Virginia already accounts for more than one-third of the total of apprentice machinists in training for 1982.[17] It should also be pointed out that at least one futurist predicts that in less than 30 years American machinists will be replaced by robots and competition from foreign workers.[18] The near-term demand for machinists in the College service area will depend upon increased manufacturing activity particularly if such growth is due to an influx of new or expanding industries.

Other skilled trade people will need to retrain within their present field in order to keep up with technological advances. Automobile mechanics will need extensive retraining as innovations in maintenance equipment and the production process occur as a result of the introduction of electronically controlled automotive assemblies. There is also a trend toward standardized tests for competency certification in such areas as automotive repair and maintenance. Personnel in the printing trades will also need to retrain in order to remain current with the revolutionary advances in technology occurring in their field.

Occupations in Agriculture and Horticulture

Plant production will be dramatically affected by developments in science and technology. While the impact of the computer is significant in this area, the most dramatic technological influences will come from advances in the life sciences. Indeed, science in general and biology in particular is on the threshold of revolutionizing the entire production process. Genetic engineering and gene splicing hold the potential of expanding growing seasons and eventually allowing for the introduction of entirely new plants. For example, tropical plants may be developed which are capable of growing in colder climates. As these developments occur they will influence not only production but price and market as well. The impact of such developments on total agricultural employment can hardly be imagined. The one certainty is that, as these developments occur, the nature of the occupations and the knowledge required by them will change, and in some instances quite dramatically.

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[17] Eva C. Galambos, Technician Manpower in the South, p. 6.

[18] Robert Weil, ed., The OMNI Future Almanac (New York: Harmony Books, 1982), p. 166.

In the relatively near-term, within the service area the greatest agricultural occupational demand will be for farm managers and to a lesser extent skilled farm workers. However, growth in this area is not likely to involve large numbers of people as only a small percentage of the population is directly employed in agriculture. Nationally, the Bureau of Labor Statistics projects that agricultural employment will actually decrease by between 7 and 16 percent in this decade and that the need for farm workers will decline between 10 and 18 percent for this same period.[19]

The interviews conducted during this study indicate that, at the present time, there does not appear to be a demand for production horticulturists. However, quality people skilled in horticulture will probably be able to find employment. There appears to be some demand for post-production horticulturists to work in the areas of wholesaling, marketing, retailing and floral design. Indeed, the general trend for nurserymen and horticulturists is to become more technically sophisticated and business oriented. One development which would significantly influence this field would be the licensing of landscape architects. There are some efforts being made to bring this about. If licensing were to occur, nurserymen would be required to hire a landscape architect prior to installing plants in a public area or around a public structure.

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[19] U. S. Department of Labor, Tomorrows Jobs, pp. 16-17.

Demand for Supervisory and Sales Personnel

Qualified people will continue to be needed in the areas of management, supervision, and sales. Managers and supervisors will be needed in real estate, on the farm, in offices, in retail operations and on the production line. One difficulty in meeting the demand for persons in these occupations is the unique blend of knowledge and skill that is often required. In order to fill these positions a person must first have at least a basic knowledge in the area he manages or supervises. An electrical supervisor of electrical workers must understand electrical work, a farm manager must understand farming and a production manager needs to understand the fundamentals of the specific production process. For this reason it is common practice to move individuals who have mastered a particular aspect of an operation or production to positions in management. While this practice ensures that the fundamentals of production and operation are understood by the manager or supervisor, skills and training in management are often lacking. The College needs to work closely with employers to ascertain and provide the training in management, supervision, and business skills which are required by diverse businesses and operations. This link with business and industry will become more vital as changes in the workplace created by developing technology occur. As in other occupations the skills required in management are likely to undergo significant alterations.

There will continue to be a demand for skilled salesmen in many areas. The nature of the basic sales occupation is, however, becoming more specialized as product lines and services become increasingly sophisticated. As this trend continues salesmen will need a more sophisticated background than has previously been required in order to effectively work with customers. In the case of the sales positions not related to sophisticated products, automation and the application of new technology may mean that fewer workers will be required to maintain operations. However, the Bureau of Labor Statistics predicts that "more stores and longer operating hours will cause employment to increase."[20] It appears that here, as in other occupational areas, jobs will be available for those persons who are able to adapt to a changing occupational environment.

Other Occupations

Thus far the presentation of employer needs has focused upon general trends in selected occupational areas. While it is not the intent of this study to individually discuss the multitude of occupational categories, there are several occupations, not addressed previously, which for a variety of reasons merit discussion.

Legal Assistants/Paralegel Personnel. As indicated in the "National Occupational Employment Statistics Survey-Based Projections," the number of paralegal personnel in the United States will increase by 109-139 percent between 1980-1990.[21] This percentage increase is greater than that for any occupation contained in the survey, including "High Tech" personnel such as systems analysts and computer programmers. This projection is also consistent with predictions by futurist John Naisbitt who points out that increasing personal transactions will result in more lawsuits in our already litigious-intensive society.[22] With increased litigation, the demand for legal assistants is already being recognized. As noted by the Bureau of Labor Statistics, "In recent years, the demand for legal services has increased to a point where many lawyers are too busy to handle all of their work efficiently. . . . By using legal assistants, lawyers can provide legal services to more persons at less cost."[23] It is interesting to note that in spite of the present and potential demand for skilled personnel in this occupation, relatively few persons are interested in training for this career. Of the high school seniors and individuals in the community who expressed an interested in attending the College, only two percent indicated an interest in the field of legal assisting. As the community becomes more aware of the opportunities for employment in this newly expanding occupation, it is anticipated that more individuals will seek training in this field.

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[20] Ibid., p. 7.

[21] "National OES Survey-Based Occupational Projections, 1980-1990," in Virginia Occupational Demand, Supply and Wage Information, p. 378. (Range is based on alternative assumptions regarding economic growth and activity.)

Banking Personnel. The nature of occupations in the banking industry is changing as the use of technology accelerates and the services provided by banks expand. The use of automated banking equipment will reduce the need for bank tellers as we know them today. However, the interviews conducted in this study indicate that the expanded services which banks will be providing (for example, insurance and brokerage services) may lead to the creation of a new occupation, that of Customer Account Executive. These executives will need to be highly skilled and knowledgeable in a large number of financial areas, such as stocks and bonds, insurance, various savings and lending plans, and lines of credit. These occupations in the banking field provide a good example of the decline of one occupation coinciding with the development of a new, more sophisticated professional career. The opportunities for two-year college graduates in the banking industry must be carefully monitored as new developments in this field occur. Occurrances such as in the banking business are likely to take place in many employment fields and will substantially alter the nature of the skills and training required to enter the job market.

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[22] John Naisbitt, Megatrends, p. 19.

[23] U. S Department of Labor, Occupational Outlook Handbook, p. 227.

Dietetic Technicians. As mentioned previously, two factors which will influence employment in the future are the aging of the population and personal concern for health care. Each of these factors will create expanded employment opportunities for dietetic technicians. The "National Occupational Employment Statistics Survey-Based Projections" indicate that the number of dietetic technicians will increase by 57 to 73 percent in the present decade alone.[24] In addition, the Bureau of Labor Statistics notes a trend toward employing dietetic assistants and technicians to help meet the demand for dietetic services.[25]

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[24] "National OES Survey-Based Occupational Projections 1980-1990," in Virginia Occupational Demand, Supply and Wage Information, p. 374. (Range is based on alternative assumptions regarding economic growth and activity.)

[25] U. S. Department of Labor, Occupational Outlook Handbook, p. 161.

Hotel/Motel and Restaurant Managers. National and local data are inconsistent regarding the demand for management personnel in hotels and motels and for restaurant managers. As for hotel managers, the Bureau of Labor Statistics reports that the number of job openings will increase ". . . through the 1980's as additional hotels and motels are built and chain franchise operations spread.[26] Locally, however, interviews with employers indicate that, while there is a demand for low-skilled service workers, the demand for hotel management personnel is relatively low. Nationally, the projections for the number of managers for restaurants, cafes and bars indicate only a relatively modest increase of 15-22 percent in this decade,[27] while comments from local interviews indicate that there is a strong current demand for qualified food and beverage service managers.

The discrepancy among this data is most likely attributable to differences in regional employment patterns. If the above assumption is correct, the demand for food service managers will exceed that for hotel/motel management personnel in the local region.

Post Baccalaureate Occupations

As a community college, J. Sargeant Reynolds' primary focus is providing two-year degrees in technical and vocational areas. However, as a comprehensive educational institution, the College also recognizes its responsibility to provide educational opportunities for those who wish to continue their education at institutions which award degrees beyond the Associate level. To this end the College must consciously consider job opportunities for four-year college graduates as it continues to develop its transfer curriculums. There are two important factors to consider when viewing job opportunities. These are starting salaries and the availability of jobs in the particular fields. Table 7 gives data on current beginning salaries for baccalaureate degree holders and Table 8 provides information on projected increases in the number of job openings for 1984 graduates over those available in 1983. Although the percentages in Table 8 appear to be very high, it must be remembered that in the spring of 1983 the country was only beginning to emerge from a recessionary period. These two tables are not intended to represent trends in employment, but rather to indicate the relative positions of certain occupational areas

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[26] Ibid., p. 39.

[27] "National OES Survey-Based Occupational Projections, 1980-1990," in Virginia Occupational Demand, Supply and Wage Information, p. 380. (Range is based on alternative assumptions regarding economic growth and activity.)

TABLE 7
Average Starting Salaries for Graduates
with Bachelor's Degrees, by Field

Electrical engineering	$26,643
Chemical engineering	26,164
Mechanical engineering	25,888
Computer science	25,849
Metallurgy, material science	24,445
Physics	22,852
Civil engineering	21,266
Mathematics	19,539
Accounting	18,684
Financial administration	18,122
Agriculture, natural resources	17,586
Marketing, sales	17,550
Social science	16,783
Business administration	16,650
Personnel administration	15,908
Communications	15,636
Hotel, restaurant, institutional management	15,447
Education	14,779
Arts and letters	14,179
Human ecology	13,917

Source: The Chronical of Higher Education, December 14, 1983.

with respect to salaries and demand at the present time. These types of data should be maintained on a current basis by the College curriculum planners to assist in decision making about transfer offerings.

TABLE 8
Projected Increase in Employment of Graduates with Bachelor's Degrees (1983 vs 1984)

Business graduates	+19%
Engineering graduates	+21%
Science, math and other technical graduates	+36%
Other (non-technical graduates)	+20%

Source: Recruiting '84, College Placement Council, Inc October, 1983.

The following discussion brings the reader back into the trend mode, which is the primary form of this report. Job opportunities over the next five to ten years for four-year college graduates for some selected areas of study are reviewed.

Liberal Arts. Liberal arts is a traditional Baccalaureate degree designed to provide the individual with a broad background in a variety of subject areas. In recent years the popularity of this education training has declined as specialized skills were seen to be more saleable to employers. While, specialized skills and sophisticated training will continue to be an important factor in employment, there are increasing indications that the value of a broader education is becoming recognized. As noted by social forecaster, John Naisbitt, in his recent book Megatrends, "We are moving from the specialist who is soon obsolete to the generalist who can adapt."[28] The broad educational foundation provided by a Liberal Arts degree may provide an excellent background to adapt to the changes which will occur as technological developments continue to revolutionize the skills and training required in the marketplace.

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[28] John Naisbitt, Megatrends, p. 37.

The interviews conducted in this study indicate that there is a growing appreciation for a liberal arts education among employers in the local area. The ability to read and write well, to think critically, communicate ideas and adapt to changing circumstances is highly valued in the marketplace. For this reason, some employers interviewed indicate that persons with Liberal Arts degrees will be actively sought to fill many types of positions in the future. Particular technical fields of specialization, however, continue to outpace the demand for liberal arts graduates.

Engineering. There is a continuing need for engineers with bachelor's degrees in virtually every specialization within this discipline. This need will continue to grow as technological advances accelerate growth and development in many fields. Indeed, growth in demand is outstripping supply. As noted by the Southern Regional Education Board: "Despite recent increases in engineering students in the 14 SREB states, it is unlikely that demand will be met."[29] The chart below illustrates the growing supply and demand for qualified persons in this field.

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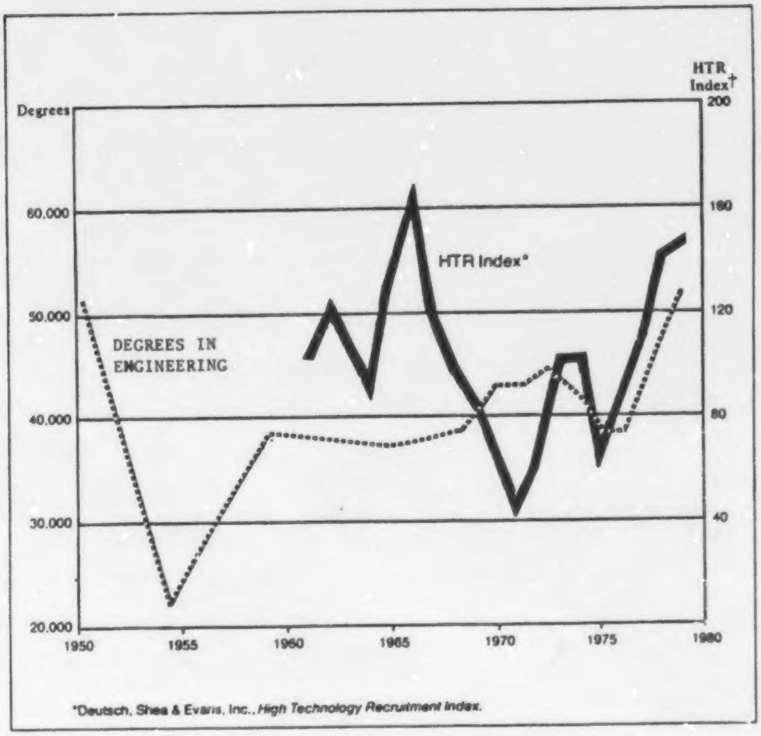
[29] Eva C. Galambos, Engineering and High Technology Manpower Shortages, p. 10.

FIGURE 4
Demand for High Technology and Degrees in Engineering



*Deutsch, Shea & Evans, Inc., *High Technology Recruitment Index.*

Source: Eva C. Galambos, Engineering and High Technology Manpower Shortages (Atlanta: Southern Regional Education Board, 1980), p. 3.

Skilled engineers are vital to the nation's future if the United States is to improve productivity and the quality of its products and services to meet foreign competition. This fact alone assures a favorable employment climate for engineers. As stated by the Bureau of Labor Statistics, "Much of the projected growth in requirements for engineers will stem from the expected high levels of investment in industrial plants and equipment to meet the demand for more goods and services and to increase productivity.[30]

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[30] U. S. Department of Labor, Occupational Outlook Handbook, p. 58.

† The Deutsch, Shea and Evans High Technology Recruitment Index is an indicator of the market for engineers and related personnel, based on recruitment advertising. Deutsch, Shea, and Evans has maintained this Index since 1961.

The interviews conducted in this study indicate that the demand for skilled engineers in the College service area is most pronounced in the construction field; however, engineers in general, and electrical/electronic engineers in particular, will be needed in many areas of the marketplace. Indeed, one local employer stated that there are not enough electrical engineering graduates nationwide to meet the needs of his company alone. It was suggested by another community leader that the College explore the possibility of expanding its 2 + 2 agreements with four-year colleges (program composed of two years at each institution) in order to help meet this demand.

As discussed at length in Chapter IV, there is a particular need for those persons entering the various fields of technology to be adequately skilled in written and verbal communications and to have overall a good general education background. For engineers and scientists who can demonstrate a substantial level of liberal learning, their career opportunities will be greatly enhanced.

Computer Science. There will continue to be a high demand for persons skilled in Computer Science over the next ten years and beyond. The reason for this dramatic growth is explained by the Bureau of Labor Statistics in the following manner:

> The history of computers has been marked by many unsuccessful attempts to solve problems, reduce costs, and increase productivity. A major cause of such failures has been the lack of adequate systems analysis and design to take full advantage of computer capabilities. As the requirements of computer users continue to escalate, they will demand greater efficiency and increased performance from their computer systems.[31]

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[31] U. S. Department of Labor, Bureau of Labor Statistics, Employment Trends in Computer Operations, Bulletin 2101 (Washington, D.C.: U.S. Government Printing Office, October 1981), p. 22.

In 1980, the Southern Regional Education Board noted, "[A] comparison of openings versus graduates in mathematics and Computer Science. . . . indicates that the Southern region will experience shortages in these fields [over the next five years].[32] Nationally, occupational employment statistics indicate that employment of computer systems analysts will grow between 68 and 80 percent in the present decade alone.[33] Interviews conducted with employers in the College service area also indicate a growing demand for highly trained personnel capable of carrying out the sophisticated analysis needed to develop applications for computer technology. Indeed, a supply of highly educated persons in the field of Computer Science will be one of the cornerstones of future business and industrial development in this country.

Sciences. Another cornerstone for future development and progress will be persons who are educated in the sciences. The following quotation, from a recent report by the National Science Foundation, notes the growth in one area of science and also illustrates the diverse application of scientific knowledge:

> Employment of chemists increased by almost 2 percent per year during 1977-80, primarily as a result of their importance in the development of new product lines, their input to the fields of energy and pollution control, and general increases in R&D funds available to major industrial employers of chemists.[34]

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[32] Eva C. Galambos, Engineering and High Technology Manpower Shortages, p. 7.

[33] "National OES Survey-Based Occupational Projections, 1980-1990," in Virginia Occupational Demand, Supply and Wage Information, p. 373. (The range is based on alternative assumptions regarding economic growth and activity.)

[34] National Science Foundation, "Manufacturing Employment Becomes Increasingly Technological," pp. 3-4.

It should be noted that the revolution created by developments in science will not occasion a growth in employment similar to that caused by the computer. However, in addition to jobs directly related to business and industry, the outlook for teaching positions in the sciences appears to be quite favorable.

Business and Accounting. As noted in Chapter VII, "Occupational Choices of Local Citizens as Determined by Academic Program Interest," business administration is one of the most popular areas of planned study among high school seniors and the general community. The demand for skilled supervisors, managers and executives by both large corporations and small businesses, as discussed previously, has undoubtably contributed to this popularity.

In addition to business administration, accounting is another field of high occupational interest by those planning to attend college. As for availability of jobs for accountants, the Bureau of Labor Statistics predicts that the increase in persons employed as accountants and auditors will be greater than that for occupations in general.[35] Interviews among employers in the College service area indicate that competition among employers will be strong for the best accountants. However, demand for those who are less qualified may be weak. Indeed, the interviews indicate that the local supply of college trained accountants presently exceeds the demand.

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[35] U. S. Department of Labor, Occupational Outlook Handbook, p. 24.

Conclusion

Technological advances, demographic alterations in the population, as well as changes in individual and social lifestyles are influencing the nature of employment, perhaps more dramatically than at any point in American history. In the years to come new occupations will be established, present occupations will cease to exist, and others will be significantly altered at a pace not heretofore experienced. Few occupations will remain unaffected by the revolutionary trends currently influencing society.

The following list contains descriptions of occupations which are expected to be in the greatest demand within the College service area during the foreseeable future.

Occupations Expected to Increase in Employment
(Not in Rank Order)

(1) Computer systems analysts with both computer and business skills.
(2) Computer programmers with both computer and business skills.
(3) Electronic and machine repair technicians and maintenance workers for high technology equipment.
(4) Home health care and related service occupations.
(5) Geriatric care personnel and related services.
(6) Highly skilled industrial electricians.
(7) Engineers (particularly electrical/electronic engineers).
(8) Managers with both computer and business skills.
(9) Computer operating personnel (except keypunch).
(10) Legal assistants and paralegal personnel.
(11) Supervisors and foremen with knowledge of both business management and computers.
(12) Instrument operators with computer skills and broad machine knowledge.
(13) Computer service technicians.
(14) Banking and finance specialists with a broad knowledge of finance, insurance, and investments.

The information presented in this chapter represents a synthesis of data from many sources regarding future occupational needs. An effort has been made to offer predictions which are as accurate as the available data dictates. However, as stated at the beginning of the chapter, determining the future needs of employers is far from an exact science.

The only certainty regarding occupations in the future is that in general they will be significantly different from those of today. Faced with this certainty, the most valuable and marketable skill an individual can possess for the future is the ability to adapt to change. This ability to adapt goes beyond the need to retrain for a new job or profession. Although it is apparent that, in many cases, retraining for a new occupation will be necessary, it is equally apparent that most workers will be required to adjust to changes in their current occupations. The job titles and functions may remain; however, the process of carrying out those functions will be substantially altered. For this reason, the employee who is capable of welcoming innovation and adapting to new realities in the workplace will be a valuable asset to his employer.

Dedicated workers are equally important to employers. There will continue to be a demand for people of quality in many occupations. Indeed, if one general trend could be selected which applies to all areas of the economy, it is the demand for highly responsible, knowledgeable employees. People who have a good attitude toward work and general loyalty to the employer and the occupation are valued in every field. Given this, it is not surprising that employers are often as interested in the personal qualities inherent in the individual as they are in his occupational skill. This fact should be remembered as we examine the skills and training requested by employers described in the following chapter.

Chapter VI

SKILLS AND TRAINING

As noted in the previous section, the knowledge and skills needed to meet the requirement of occupations in the future will be substantially different from those which exist today. As new technology is developed and improved productivity and quality are demanded in the marketplace, the level of skills required by employers will be significantly greater. For this reason, it is imperative that educators examine the skills which will be needed and the training which must be provided to meet the needs of the future. As expressed by Senator Ernest F. Hollings in a recent interview published in the Community and Junior College Journal, "we face a future of chronic unemployment and underemployment unless we begin to prepare now for the jobs of the future and the skills necessary to fill and maintain those jobs."[1]

Training in specific vocational skills will be a priority concern of employers in the future. Indeed, even highly educated and skilled persons in the workplace today will need additional training in order to remain current with state-of-the-art developments in their field. J. Sargeant Reynolds Community College must respond to the needs of employers by providing specific occupational skills. However, more than vocational training is required to prepare individuals for the rapidly changing environment of the future. As technology develops, once valued vocational skills will quickly become obsolete. Educational institutions must provide students with a foundation of general knowledge and ability which will benefit the individual regardless of their specific occupation or current vocational needs. In order to ascertain what skills will be most needed in a variety of occupations, interviews were conducted with employers from diverse areas of the local economy. Content analysis of their responses reveal several basic categories of skills desired by a variety of employers.

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[1] Dale Parnell, "Education Support cited by Senator Hollings," Community and Junior College Journal, October 1983, p. 8.

The skills most desired by employers have been categorized and divided into four basic classifications. The classifications and rankings in the table below reflect the relative frequency of employer requests for skills related to each category.

TABLE 9
Skills Sought by Employers
(by Rank Order)

Classification	Skill Category	Rank
Technology	Computer Related	1
	Electrical/Electronics	5
	Mathematics	6
	Science	9-10
	Engineering	14
Business	Finance/Accounting	2
	Marketing/Sales	4
	Business Operation	7
	Management/Leadership	8
Personal	Human Relations	3
	Oral Communication/Personal Presentation	9-10
	Work Habits/Ethic	11-12-13
General	Basic Skills	11-12-13
	Logic/Reasoning/Analytical Skills	11-12-13

Skills Related to Technology

As anticipated, skills related to the development and application of technology are highly desired by employers. Of these skills the most sought after are computer related. It is apparent that, at least in the working world, computer literacy will soon be a necessity. As John Naisbitt notes, "In the new information society, being without computer skills is like wandering around a collection the size of the Library of Congress with all the books arranged at random with no Dewey Decimal system, no card catalog--and, of course, no friendly librarian to serve your information needs."[2] It should be stressed that the emphasis on computers does not mean that everyone will need to be a computer programmer or systems analyst. Sophisticated skills, such as the ability to analyze and develop computer systems, as well as more technical skills in programming, data entry/processing and computer operations, will be in demand. However, more frequently employers are looking for people who have the ability to retrieve and use the information that the computer provides. Many employers express concern for the resistance to, and fear of computers and other technical equipment demonstrated by their employees. The importance to society of a work force capable of employing computer technology is so great that this concern must be addressed.

It stands to reason that increased use of technology will necessarily increase the demand for skills relating to the maintenance and/or operation of advanced electronic equipment. Indeed, knowledge of the operation and maintenance of electrical and electronic systems is highly valued by employers. This knowledge is particularly appreciated among employers involved in manufacturing, where the application of technology has implications for the skills required of many employees such as assemblers, operators, craftsmen and production workers.[3] Numerous individuals who once worked on a basic production line now must monitor and maintain control panels and sophisticated equipment.

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[2] John Naisbitt, Megatrends (New York: Warner Books, Inc., 1982), p. 33.

A major factor in the increased use of technology is the need to improve productivity. Employers are constantly looking for new technologies and applications to enhance production and quality. Coinciding with the development and application of technology is the need for individuals with skills in mathematics, science and engineering. Of these skills, mathematics is the most fundamental and also the skill with the greatest range of applications. As noted in a report by the Southern Regional Education Board, "Mathematicians apply their skills in business and government at jobs as diverse as developing insurance rates to tracking satellites."[4] Persons with abilities in these skill areas will be well prepared to function in a marketplace preoccupied with increasing productivity.

Skills Related to Business

Knowledge and skills related to basic business operations and principles are desired by employers even in a "high tech" world. Of these skills, those most frequently requested by local employers relate to finance and accounting. The current high level of interest rates for borrowing and the recent economically austere period has emphasized the importance of these skills in the business world.

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[3] Eva C. Galambos, Technician Manpower in the South: High Tech Industries or High Tech Occupations (Atlanta: Southern Regional Education Board, 1983), p. 4.

[4] Eva C. Galambos, Engineering and High Technology Manpower Shortages; The Connection with Mathematics (Atlanta: Southern Regional Education Board, 1980), p. 8.

Fundamental skills in marketing and sales are also desired by employers in the competitive marketplace. These skills are obviously crucial to the success of many operations. As these skills become evermore sophisticated, their demand by employers will increase.

Also perceived as desirable in the highly competitive marketplace are basic skills in general business operations. Several persons interviewed noted that many individuals with extensive technical knowledge of their particular operation, do not contribute to the success of their business due to an ignorance of basic business concepts. This is all too frequently true for persons in management positions. However, an understanding of fundamental business principles is desired even of employees who do not hold positions in management. One employer, for example, noted the importance of an employee's awareness of such an elementary concept as the relationship between a company's profit and its survival.

Managerial ability and leadership are also sought by employers. The ability to motivate others and direct their activity productively is a very valuable asset. Many employers are willing to cultivate these skills when found among employees and actively look for indications of potential in this area when hiring.

Personal Skills

One area which should not be overlooked among the more easily defined categories of skills consists of those which may be labeled personal skills. These skills have applicability to a wide range of occupations and are considered valuable to many employers. The most frequently cited of these are human relations skills. The ability to work well with other people in a business setting is important to almost any operation. Beyond this, employers seek people who possess an empathy for other people and are able to understand the fundamentals of human interaction. Such skills are obviously vital in management and sales positions where successful relations with subordinates and customers is a necessity. However, these same skills are important in every position where human interaction occurs.

Employers are particularly concerned about the image of the company which is projected through their employees. For this reason, many employers stress the importance of good oral communications skills and personal presentation. Collectively, these skills encompass the ability of employees to present themselves well before the public through their ease of expressing ideas clearly, their good personal grooming and appropriate attire. Indeed, these skills are so fundamental that their importance to employers is overlooked by many individuals seeking employment. However, the ability to present and express one's self well is a valued asset and should be cultivated as are other skills.

Appropriate work habits and the desire to do a good job (work ethic) are so very basic to the concept of employment that the large number of employers who cited these skills as an unmet need in the labor pool is surprising. Obviously, employers are looking for dedicated, loyal, hardworking people who are concerned with the quality of their work. However, many employers note a languid attitude toward work on the part of many individuals. Unfortunately, formal training programs do not adequately address this issue, if at all. Indeed, there are indications that, in some cases, a college degree only increases the already inflated work expectations held by an employee. One employer commented that "kids today are afraid to get their hands dirty," and suggested that educators have the responsibility to teach students about responsibilities in the "real world" of work. To the extent possible, attention needs to be given to fostering in our students a positive attitude toward work. Undoubtably, employees who possess these attributes are considered more valuable in the marketplace.

General Skills

In addition to personal skills, other general skills are seen as important regardless of occupation or employment area. Frequently mentioned in this regard are basic skills such as reading, writing and arithmetic. Those who expect the technological revolution to be a panacea for the problem of illiteracy are seriously mistaken. Indeed, individuals who lack basic literacy skills are finding it increasingly more difficult to find jobs, particularly jobs with sufficient remuneration to support themselves. The world of tomorrow will be even more complex and new technology will place greater importance on basic skills. Addressing the problem of basic skills is of vital concern to the entire community. As concluded in a report by the Southern Region Education Board:

> Greater attention to quality offerings and increased participation in high school mathematics is warranted not only because of high technology manpower demands but also to meet societal needs. There has been a general uproar in recent years about the inability of most high school graduates to compose a coherent paragraph. The inability of a major portion of young people to solve simple

> computational problems that relate to everyday life is appalling. The unemployment problems of disadvantaged youths who can find no niche in an increasingly technological economy stem to a large extent from their lack of fundamental skills in mathematics and English.[5]

The importance of the basic literacy skills must be stressed in every program of the College or our graduates will be relegated to entry level positions throughout their careers.

Another general skill desired by employers is the ability to reason analytically and logically. In an information-intensive society, the ability to discern trends, conceptualize and provide meaning to discrete data is very important. One employer expressed concern that computers are now providing so much data that managers who are unable to quickly discriminate between important and unimportant information will soon become ineffectual.

It should be noted that the presentation above does not attempt to provide a comprehensive list of skills mentioned in the interviews conducted in this study, nor is it intended to be an exhaustive list of skills which will be required by employers in the future. By compiling a synthesis of those skills most frequently desired by employers from diverse businesses and industries, it is anticipated that an appreciation for predominate skills generally valued by employers has been derived. As such, it provides the College with useful information regarding the fundamental skills which will benefit graduates of J. Sargeant Reynolds Community College as they enter the marketplace.

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[5] Ibid, p. 15

Training by Employers

In the context of employment, required education and training is a generic phrase incorporating the general concept of the knowledge and ability needed to satisfactorily perform specific functions associated with a designated job. The knowledge and ability required of an individual to perform a job is determined by the employer and may vary from business to business. However, as changes in the working environment develop which affect the performance of job functions, the skills required to satisfactorily meet the demands of the specific job are altered. When this occurs additional training is required to maintain competency in a given occupation. In response to this need employers incorporate a variety of methods to improve or develop the skills of their employees.

Over 90 percent of the employers interviewed in the study provide in-house training for their employees. Nationally, industry spends billions of dollars annually on the education and training of its employees. The emphasis placed on in-house training is but another indication of the importance of continued education and training and "lifelong learning" in the marketplace. The nature and extent of in-house training activity varies from employer to employer and is generally a function of the size of the business and the sophistication required to provide the company's product or service. Three years ago AT&T spent four and half times as much on the education of its employees as MIT spent on the education of its students.[6] Educational and training activities in the College service area range from providing brief orientation sessions to the use of sophisticated training facilities complete with professional programs and instructors. In larger companies, training is often provided at the headquarter's installation or through packaged programs sent to branch operations.

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[6] K. Patricia Cross, "New Frontiers for Higher Education," in Partnership with Business and Professions No. 3 Current Issues in Higher Education (Washington, D.C.: American Association for Higher Education, 1981), p. 1.

Companies also make extensive use of outside sources. Training seminars are often provided by external consultants or training personnel offered by suppliers of new equipment purchased by the company. Additional training is often provided through unions, professional associations or educational institutions (through such departments as our Center for Office Development, or the VPI Extension Service). Many employers reduce the substantial cost of establishing extensive and time consuming training programs by encouraging employees, through tuition reimbursement, to continue their education at educational institutions on their own time. Several of the employers interviewed indicated that they had employees who had completed or were currently taking courses at J. Sargeant Reynolds Community College.

In fulfilling the role of a community college it is important that J. Sargeant Reynolds strive to meet the training needs of employers. Equally important, however, is the need to distinguish between the needs of employers which are appropriate for the College to address and those best met by the employers. The College must provide a pool of trained manpower for employers in its service area. However, it should be cautious about providing specific training programs for selected businesses and industries. It should also be recognized that many employers prefer to train their own personnel. Although costly, direct training of personnel for specific functions assures a standardization in production and service which cannot be acquired in any other manner. For this reason, many employers appear to view the training of personnel as a quality control measure. Indeed, one employer indicated that their unique standards and operating procedures are so vital that previous training, or work experience with other employers, is viewed as a liability.

Regardless of the nature and method of training provided, the need to develop a work force capable and willing to continue to expand their knowledge and skills throughout their career is evident. The days of ending formal education after high school are certainly gone, employers are seeking the most effective means of acquiring and developing personnel capable of functioning in a rapidly changing work environment. A major concern of the College must be to provide students with the educational background which develops a foundation for their continued growth and development. This whole idea of education and training in colleges versus that offered by industry will be discussed at greater length in Chapter VIII in the section devoted to the partnership between industry and higher education.

Chapter VII

OCCUPATIONAL CHOICES OF LOCAL CITIZENS DETERMINED BY ACADEMIC PROGRAM INTEREST

There are a variety of reasons why persons enroll in courses and instructional programs at J. Sargeant Reynolds. The most predominant of these reasons is to obtain the training and skills necessary for immediate entry into the job market. Other reasons, though not as predominant, are to obtain credits for transfer to a four-year college or university and for personal interest or enrichment. A good indication of occupational choice can be obtained by viewing the curricular interests of these citizens and their reasons for attending a two-year college.

Academic Program Interest of Area High School Seniors

Two research studies conducted by the College indicate that by far the majority of the local high school seniors who may attend a two-year college and of those in the general population who may attend J. Sargeant Reynolds Community College are interested in obtaining "marketable" job skills. High school seniors who plan to enter the job force upon completion at a two-year college express the greatest amount of interest in programs in the area of Business and Commerce, with over one-half of their program selections falling in this category, followed by Data Processing and related programs, Health Services, and Engineering and Industrial Technology. Table 1 displays the relative magnitude of expressed interest by high school seniors in various categories of study.

TABLE 10
Academic Areas of Interest of High School Seniors Planning to Attend a Two-Year College, by Post-Graduation Plans

Categories of Study	All Respondents	By Post-Graduation Plans Seek Immediate Employment	 Transfer to 4-Year School
Business and Commerce	51%	58%	31%
Data Processing & Related Programs*	14%	13%	15%
Health Services	14%	10%	23%
Liberal Arts	1%	0%	3%
Engineering & Industrial Technology	12%	10%	17%
Natural Science & Agriculture	1%	1%	1%
Public Service	6%	5%	8%
Arts & Design Technology	2%	3%	1%
TOTAL	100%	100%	100%

*This category includes computer programming, data entry and computer operations. (See Appendix A).

Within these broad categories, and more specifically, high school seniors seeking immediate job skills want to pursue careers in business administration, computer programming, secretarial science, accounting and small business management, in this order. Other career areas of considerable interest include banking and finance, computer operations, and nursing. A detailed listing of the specific programs contained in each of the categories shown in Table 10 and their percent of responses received can be found in Appendix A.

High School seniors who plan to transfer to a four-year college or university comprise approximately one-third of the students who are planning to attend a two-year college. As can be seen in Table 10, these potential transfer students hold somewhat different program interests, although Business and Commerce remains the preferential category. The specific programs most desired by this group of students include computer programming, drafting and design, small business management, medical assisting, and medical laboratory technology. Appendix A provides a complete list of programs of study that these potential transfer students are interested in pursuing.

It is noteworthy that the popularity of programs in the area of business and commerce is not unique to the individuals surveyed by the College. Business and Commerce was the most popular intended area of study indicated nationally by college-bound seniors who took admission placement tests in 1983, as shown in Table 11.

TABLE 11
Comparison Between National and Local High School Student College Curricular Interest

Top Six Intended Areas of Study of High School Students Who Took National Placement Tests*		Top Six Intended Areas of Study of Local High School Seniors Who May Attend a Two-Year College	
Area	Percent	Area	Percent
Business & Commerce	18.5	Business & Commerce	51
Health & Medical	14.7	Data Processing and Related Programs	14
Engineering	12.5	Health Services	14
Computer Science/ Systems Analysis	10.1	Engineering & Industrial Technology	12
Social Sciences	7.2	Public Service	6
Education	4.5	Arts & Design Technology	2

*Source: National College-Bound Seniors, 1983, Admissions Testing Program of the College Board (New York: College Entrance Examination Board, 1983), p. 9.

Academic Program Interest of the General Population

The occupational interests of the community-at-large parallel those of high school seniors to a great extent as far as the general curricular emphasis is concerned. There are notable differences, however, both in the specific programs within the broader academic categories that the two groups want to study and in the reasons for attending a two-year college. In addition to seeking specific job skills or transfer credits, a substantial number of the local citizens who plan to attend J. Sargeant Reynolds Community College want to fulfill a personal or avocational interest. Personal interest was the second-most frequently selected reason for wanting to attend J. Sargeant Reynolds, following that of acquisition of immediate job skills. Table 12 displays specific curricular program choices of greatest interest to the general population, according to their expressed purpose for attending the College. A detailed listing of the interests, by program, of household members who may attend the College can be found in Appendix B.

Given the interest in acquiring skills useful to immediate employment, it is not surprising that Data Processing and related programs (including Computer Programming, Computer Operations, and Data Entry Operations) is a very popular category of possible study. These areas were selected by more respondents in the community who may attend the College than any other category of study, and accounted for fifteen percent of all responses received from the community (see Table 12). These areas were also of substantial interest to high school seniors with 14 percent of respondents interested in majors from the computer-related areas, making it the second most popular category of possible study at a two-year college from among high school students.

Despite the fact that twenty-seven percent of the general population indicated a belief that health related jobs would be in demand during the next five years, relatively few community respondents indicated an interest to study in the health area. However, the Health Services field was quite popular among high school seniors interested in attending a two-year college, as shown in Table 10, with 14 percent indicating this as a curriculum choice. Nursing was the most popular choice of study within the health field for both the high school seniors and the general population.

TABLE 12

Curriculums of Primary Interest in the Community at Large

			By Reason for Attending								
All Respondents			Obtain Immediate Job Skills			Obtain Transfer Credits			Personal Interest		
Rank		% Interest	Rank		% Interest	Rank		% Interest	Rank		% Interest
1	Data Processing & Related Programs	15	1	Data Processing & Related Programs	18	1	Data Processing & Related Programs	13	1	Data Processing & Related Programs	14
2	Bus. Admin./Mgmt.	8	2	Bus. Admin./Mgmt.	10	2	Liberal Arts Science	8 8	2	Bus. Admin./Mgmt.	8
3	Accounting	5	3	Accounting	6				3	Photography	7
4	Photography	4	4	Electronics Tech. Drafting & Design	4 4	4	Bus. Admin./Mgmt.	5	4	Interior Decorating	5
5	Electronics Technology Drafting & Design	3 3	6	Photography Secretarial Science	3 3	5	Transfer Engineering Small Business Admin. Nursing	4 4 4	5	Accounting	4

Occupational Interest Versus Demand

Given the obvious interest of the population in obtaining skills which lead to employment, the college has a role to play in making the public aware of career opportunities which presently are available or will be in demand in the future. While, as the public perceives, there will be a demand for persons in the fields of Business and Computer Data Processing and related programs, the extremely high interest expressed in these programs may not be warranted by the employer demand. In addition, there are areas, largely ignored by the public, in which demand is likely to be high.

One area of surprisingly low interest in the College service area, in light of the publicized demand in the field, is proposed study in the area of technical education including Engineering and related technologies, Electrical and Electronic Technologies, Environmental Control Technologies, and in Trade and Industrial Education. Very few members of the general population or high school seniors expressed an interest in any of these apparently high demand occupational fields. Within this area, Drafting and Design is the most popular among high school students, capturing 3 percent of the interest. Both Drafting and Design and Electronics Technology were selected by approximately three percent of respondents in the population.

Although it might be expected that programs in Engineering would have been more popular with both groups, it may be that the lack of interest indicated in our surveys can be attributed to a belief that study in this field is more appropriate in a four-year program. Nevertheless, the demand for trained technicians to operate and maintain the new technologies exists and is likely to grow in the future.

The public's preoccupation with areas such as computer programming and business administration may prove to be myopic. The number of people required in these areas is not unlimited. As the use of computer technology increases and more individuals become proficient in programming computers, the knowledge and skill required by employers of even entry level programmers will increase dramatically. Consequently those without a broad base of knowledge beyond the computer may expect to remain in entry level positions.

Students who enter programs at the College must be made aware of the career implications and employer expectations inherent in their choice. The College has a responsibility to the community to continue to monitor the job market for information regarding the demand for occupations and to strive to make this information as accessible to the public as possible. Only through such efforts can the College provide the education and training to which its students and the community are entitled.

Chapter VIII

PARTNERSHIP WITH BUSINESS AND INDUSTRY

Events of the past decade have placed increased importance upon the relationship between private industry and educational institutions. This is not to say that mutually beneficial relationships and arrangements have not occurred in the past. Indeed, the success of one has often been dependent upon the other. However, the recent challenge to the nation's industry from foreign competition has resulted in a need to increase productivity and quality. The response of American business to this challenge and the subsequent introduction of new technologies have greatly increased the economic importance of an educated population. For this reason, academic issues, once the concern primarily of educators, are commonly recognized as vital to the health of the economic community. The reasons for the renewed importance of the educational system to business and industry is expressed well by Lewis Branscomb of the International Business Machines Company:

> The private sector's motivation to make a significant and sustained commitment to the revitalization of our schools is clear. Beyond a sense of corporate responsibility, companies understand that their ability to introduce productivity-improving technology is dependent upon a better-educated community of workers, customers and consumers.[1]

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[1] Lewis M. Branscomb, "The Computers Debt to Science," Perspectives in Computing, October, 1983, p. 19.

For their part, educators have become increasingly aware of the importance of providing students with skills and knowledge directly applicable to the world of work, and of the increasing cost associated with providing state-of-the-art training in a rapidly developing marketplace. Such an understanding has increased the importance of constant interaction with the business community. Given the environment for cooperation and the mutual concerns shared by the industrial and the educational communities, it seems only natural for a partnership between the two to develop.

A Rationale for Partnership

Institutions of higher education no longer stand alone as the providers of post-secondary education. Industry is now spending billions of dollars each year on the education and training of employees. In an address to the 1981 National Conference on Higher Education, Harvard Professor K. Patricia Cross described three types of relationships which can exist between colleges and non-collegiate enterprises who provide occupational training: (1) Competition, where colleges and other providers of vocational education and training offer similar programs and courses. (2) Cooperation, where educators and businessmen act in concert with one another to develop programs which are suited to meet the educational and occupational needs of the community, or (3) Parallelism, a relationship which existed for many years in the past, where Colleges offer the traditional discipline courses and industry provides specific skill training, each going along on well-defined, non-conflicting, and non-sharing paths.[2] It stands to reason, that, of the three relationships, cooperation is the most mutually beneficial of the alternatives. Much of the immense expenditures by both the public and private sectors on educational and training programs is wasted if competition is allowed to prevail. Conversely, the merger of the talents and resources of educational institutions and the business sector provides opportunities beyond the ability of either group, with the entire community benefiting. It is, however, important to define the responsibilities appropriate to each of the parties before attempting to expound on the benefits which can be derived from such a partnership. It is only through the institution of common understanding of the needs and abilities of each sector that a foundation for a partnership can be established.

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[2] K. Patricia Cross, "New Frontiers for Higher Education," in Partnerships with Business and the Professions, No. 3 Current Issues in Higher Education (Washington, D.C.: American Association for Higher Education, 1981), pp. 2-5.

Efforts are already underway on a national level to facilitate cooperation between community colleges and the private sector. A joint program of the American Association of Community and Junior Colleges and the Association of Community College Trustees, entitled "Putting America Back to Work," is identifying common concerns of educators and businessmen and promoting cooperative efforts to address these concerns. The Job Training Partnership Act is responsible for bringing representatives from industry and education together throughout the country. Other endeavors, both formal and informal, are also underway to strengthen the bonds between the education and business sectors of the community. All of these activities are indicative of the favorable climate for the establishment of specific partnership arrangements.

Despite the encouraging trend toward the development of a partnership between educational institutions and business and industry, several factors must be considered prior to the establishment of such a relationship. As Milton Stern, Dean of University Extension at the

University of California, Berkeley, recently stated, "Partnership is one of those words that can encourage pleasant thoughts of compatible collaboration. But unless such partnership is worked at realistically, more often than not the era of good feelings [between business and education] will not survive any better than in any other kind of partnership."[3] For this reason both parties need to carefully consider their appropriate role in providing education and training.

The Role of the Community College and Business and Industry

As a community college J. Sargeant Reynolds recognizes its responsibility to assist business and industry in developing and maintaining a pool of trained manpower. In an article dealing with the role of colleges in providing training and development, Ernest A. Lynton of the Center for Studies in Policy and the Public Interest, University of Massachusetts, notes three purposes of corporate training identified through a major study conducted in 1977: "(1) to accommodate the growth and turnover in personnel (2) to meet education and training needs created by changes in the knowledge and skills required by, or available to, a company and its employees (3) to improve the skills and performance of present employees in their present jobs."[4] In each of these areas, training for job entry, training to remain current in occupational areas, and training to improve job skills, the College has a role to play. But the question is, what exactly is the nature and extent of this role?

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[3] Philip N. Nowlen and Milton R. Stern, "Partnerships in Continuing Education for Professionals," in Partnerships with Business and the Professions No. 3 Current Issues in Higher Education (Washington, D.C.: American Association for Higher Education, 1981), p. 16.

[4] Ernest A. Lynton, "A Role for Colleges in Corporate Training and Development," in Partnership with Business and the Professions No. 3 Current Issues in Higher Education (Washington, D.C.: American Association for Higher Education, 1981), p. 9.

It is important to recognize the distinction between training which is appropriate for a community college to provide and that which should be provided by an employer. As new technology increases the specialization and sophistication required in business and industry, the once clear dichotomy between training which should be provided by colleges and that which employers need to provide often becomes blurred. When this occurs, it is important for the private sector to recognize that it is unreasonable to expect educational institutions to produce graduates in a wide variety of occupations who will not require a certain amount of on-the-job training. This is particularly true when the production process or equipment of a corporation is unique and specialized. In addition, businesses and industries need to appreciate the immense cost of providing ongoing academic programs which employ rapidly developing technologies.

Mechanisms for Partnership

It should be noted from the beginning that many of the mechanisms for developing a partnership with business and industry are already in existence at J. Sargeant Reynolds Community College. Every year nearly 300 citizens volunteer their time to serve on the 30 curriculum advisory committees of the College. The purpose of these committees is to utilize the expertise of individuals working in particular fields to assist faculty in the development of academic programs. In addition to offering advice on curricular matters, these local citizens can provide assistance in obtaining necessary state-of-the-art equipment and in securing jobs for program graduates. One of the more serious concerns expressed by the employers interviewed in this study is that the College may not be making adequate use of established advisory committees. The College must make a concerted effort to effectively use advisory committees. The link with the business community provided by these individuals is extremely valuable to fostering a partnership with business. Several business leaders interviewed in this study specifically offered their services to work with the College in the development of programs currently being planned for implementation.

A long established relationship with the business community comes from the three or four hundred persons employed in local business and industry who serve each year as part-time faculty. Not only do these faculty permit the flexibility required to offer the types of programs and courses necessary to meet the changing community needs, but the work experience and skills brought to the classroom by these persons are of considerable value and supply an important link between the classroom and the workplace.

The interviews with business leaders yielded additional ways that the workplace experience might be incorporated into the academic setting. For one, there is a definite willingness on the part of these businessmen to offer lectures and presentations to students at no cost to the College. One business leader suggested that professional organizations may also be willing to provide lectures on specific topics. Following a different line of thought, another employer mentioned that J. Sargeant Reynolds faculty could benefit by working in their field outside the institution. Indeed, one by-product of an ongoing partnership may be to provide opportunities for the faculty to periodically employ their knowledge and skill in the marketplace. This widespread willingness on the part of business leaders to work with the College and its instructional programs is very encouraging. It is important for the College to take advantage of as many of these offers as possible.

In addition to the contributions made by individuals from the business community, many employers are willing to allow the College to use corporate facilities for the provision of special learning environments, equipment or additional classroom space. As may be expected, such assistance is often offered in conjunction with the establishment of training programs designed to assist the companies' own employees. However, most employers interviewed would not restrict participation in these programs to their employees only. The study also found that some professional organizations may be willing to provide funds for the College to establish training programs or to purchase equipment in specific occupational areas.

A partnership with business can also be fostered through establishing arrangements for cooperative educational experiences for students. Such an arrangement provides the student with valuable work experience which supplements classroom instruction. Many of the employers interviewed indicate that such experience provides important occupational skills which can be acquired only by working in specific jobs in the field. Such arrangements can also provide the College with valuable information concerning the actual skills needed by employees in the marketplace. Thus cooperative education not only benefits the College, students, and employers, but also provides an important channel of communication between the College and the business community.

In addition to the above, several persons interviewed suggest the possibility of establishing joint educational programs modeled after similar programs established in other parts of the country. In such programs, the college provides the general academic training and corporations provide specific technical or occupational training. There are numerous variations of this general concept which could be explored (i.e., apprenticeship programs and/or split curriculums). While there are substantive problems inherent in implementing such projects, it is incumbent upon the College to carefully examine proposals which would not compromise the academic integrity of the programs under consideration.

The presentation above only serves to illustrate some of the diverse ways that a partnership with business and industry can be developed. The College should explore these possibilities and seek other avenues for developing a mutually beneficial relationship. The interviews conducted in this study indicate that the business and industrial community is generally amenable to working with the College on many levels to provide training for the population in our service area. The College must make every effort to tap this valuable resource.

Benefits of a College/Business Partnership

There are some clear advantages to the community-at-large from the development of a more comprehensive relationship between business and the College. An established labor pool, trained to meet the latest skill requirements of existing companies and of those businesses which may be attracted to the area by such a labor force, would result in a generally improved economy, with a reduced unemployment rate. The careful and continuing identification of employee skills necessary to meet the demands of changing technology, and the subsequent training of local residents to acquire these skills, permit area businesses to use modern production and office processes to improve their competitive position. Correspondingly, businesses looking for new locations make their site decisions largely on the availability of qualified manpower.

In addition to keeping businesses in the area and attracting new companies, a work force of better trained people can mean higher wages, resulting in increased business activity and expansion of the local tax base.

Besides the general benefits associated with an improved economy, closer relationship between the College and local businesses would provide manpower training in a more cost-effective manner through the sharing of resources. Savings to the College would result in more tax dollars being available to expand and improve educational opportunities for individuals in the community. From the standpoint of local business and industry, it is defensible to conclude that it is more cost-effective for these corporations if they rely on the non-profit, tax-exempt educational institutions to provide much of their training rather than to continue the practice of maintaining a separate system within their profit-making, taxed sector. When comparable training can be provided by the College, local companies benefit by making use of this resource. There were several large companies represented in this study which have extensive in-house training programs for their employees and hold the belief that only they can effectively provide such training. During the interviews with executives of these companies, in several instances these persons were moved to the point of considering the possible use of College resources to cover at least a portion of such training.

An additional benefit to be derived by companies working in partnership with the College is the mutual growth and development of instructional personnel and teaching techniques which can result from the interaction of College faculty and professional training personnel. The opportunity for such interaction exists. As a result of this study, College faculty have already visited one local business to observe the training facilities and methods used by this employer. Where possible, such interaction can be very valuable and should be expanded into an ongoing process. Through such a program College faculty can become more aware of the nature of the training required by employers, and corporate training personnel can benefit from the expertise and resources represented by faculty.

Also, as a consequence of personal exchanges between faculty and corporate training personnel, attitudinal changes about the appropriate roles of colleges and businesses in the training of individuals can more easily take place. The fostering of greater interaction between faculty and private business personnel can thus result in more innovative approaches to maintaining adequately trained manpower in the community.

Summary

The need to forge a partnership between the College and business is becoming more pronounced as new technology is introduced and training requirements become more sophisticated. Many of the mechanisms for such cooperations are already in place, others remain to be developed. This study finds that there are many business leaders prepared to work with the College to establish a mutually beneficial partnership. While issues relating to the ultimate control over curricula and the appropriate role for each partner may need to be resolved, the ultimate result of such a relationship would benefit the College and the business sector, as well as the community-at-large. By working cooperatively with local business and industry, the College can better serve the citizens of its service area. Such a worthy goal should be vigorously pursued by the College.

Chapter IX

RECOMMENDATIONS OF THE STUDY FOR COLLEGE CONSIDERATION

As a result of the findings of this study, a set of recommendations for action has been prepared for the faculty and administration of J. Sargeant Reynolds Community College to consider as they plan the future direction of the institution. It is hoped that employers and others interested in the development of human resources in the Richmond metropolitan area will also review these recommendations and offer any comments or advice on implementation to the College staff.

Prior to the presentation of the recommendations, some general observations from the study are in order, to the extent that they serve as a rationale for the suggested actions by the College. First, the rapidly changing technologies are creating a correspondingly rapid obsolescence of specific job skills requirements. In the natural rush to accommodate for these changing skill requirements, the importance of instruction in the fundamental concepts of particular disciplines and in the elements of general education must not be overlooked as coping mechanisms for the diverse socio-economic and technical changes taking place.

It must be recognized also that the need for employees possessing cross-disciplinary knowledge is becoming increasingly important, as advances in high technology are introduced into the operations of traditional industries. Persons trained in the technology areas must be able to adapt their knowledge and skills to the operations of businesses other than those classified as "high tech"--automation of manufacturing in the clothing industry, development of graphics for the advertising companies, the processing of information for accounting firms or law offices. On the other hand, persons who are either entering or are currently employed in the traditional occupations must be trained or retrained to understand the applications of scientific advances to their specialization, not as technology specialists but as users of the technology, as the traditional organizations modernize their operations.

To effectively support the economic development of the community and to train students for jobs where a demand exists, it is essential that an ongoing relationship be established between the College and the business community. Cooperative efforts are mutually beneficial to the College and to local employers when such efforts foster appropriate curricular design, the maintenance of a well-informed teaching staff, the availability of high quality equipment for instructional use, and a good record of student placement. Such a partnership particularly serves to keep the businesses apprised of what the College can do for them in providing initial training for new employees and retraining of current employees. In turn, the partnership allows the College to be informed of what the employers' specific manpower and training requirements are.

The ultimate success of the occupational education and training provided by the College will be measured in terms of the benefit they provide to the economic vitality of the community both collectively and individually. To a very great extent, this vitality will be dependent upon the development of a comprehensive program for community and economic progress. Such a program would require cooperative and integrated efforts on the part of all levels of government, as well as the business community and educational institutions. At this point it is important to offer a caveat about the nature of such activities. Rather than expending their primary efforts on attracting high technology industries, the local leadership in the Richmond metropolitan area should put greater emphasis on stimulating existing industries to upgrade their plants and operations through the use of new technology and on seeking new, traditional industries which will operate out of modern facilities.

As noted in a recent publication of the Southern Regional Education Board, efforts to attract new high technology industries is a very competitive activity. Opportunities for increasing the local demand for high technology occupations may receive diminished attention if primary emphasis is placed on bringing new high technology industries into the community. Nationally, employment in high technology occupations is projected to grow in the coming decade at a considerably faster rate than the total employment in high technology industries.

Beyond the role of providing formal instructional programs to meet the individual and corporate needs of the community, the College is a natural vehicle for enhancing the cultural and social well-being of the local citizens. During this study, it became clear that the College can build upon its current foundation of community support activities to become a major participant in the life of the community. The very location of its campuses in the inner city and the suburban and rural areas provides ideal settings for J. Sargeant Reynolds to be a college of the community, not simply a college in the community. In this role it can use its facilities and staff to assist in the resolution of local problems and the creation of a community in harmony.

Recommendations

1. The Curriculum Committee should carefully review existing and proposed academic programs in the light of the data contained

in this study and in future updates to verify the presence of employment opportunities for graduates of these curriculums.

2. The curricular design of all technical and occupational programs offered by the College should ensure the presence of adequate instruction in the fundamental concepts of the particular field of study to better prepare students to adapt to change. Excessive emphasis on specialized skill development, to the degree that fundamental concepts are neglected, should be consistently avoided.
3. To promote the students' future success in society, the College should take immediate steps to ensure that all of its graduates are equipped with adequate communication, basic computational, and social skills, as well as with a general understanding of governmental systems and the nation's economic structure.
4. The College should establish a permanent vehicle for ensuring that its program-bound students receive a formal presentation of factors related to successful employment. Topics should cover the importance of proper work habits and attitudes such as punctuality, interpersonal relationships, positive attitude toward the job, appropriate decorum at the work site, and the employees' stake in helping the company to succeed.
5. The College should review all present and future programs to assure that the establishment and maintenance of a quality program will not exceed College resources and that such programs do not unduly duplicate programs offered by other accredited, post-secondary institutions.
6. The College should continue its efforts to incorporate a working knowledge of and familiarity with computers in its academic programs.

7. To improve the employability of the College's graduates the concept of cross-disciplinary study should be incorporated into the two-year curriculums to the extent possible. This revolutionary approach to curriculum development should not be unduly limited by the constraints of past ways of operating.

8. Better use should be made of the College Curriculum Advisory Committees. An annual review of Committee memberships should be conducted within the College to ensure that the best possible community expertise is made available for program development. Meetings of these committees should be held at least quarterly.

9. Each occupational and technical program offered by the College should contain provisions within its curricular structure for some curriculum-related, off-campus, at work site experience. One major advantage of such an activity would be the students' learning experiences associated with state-of-the-art equipment and applications, which are frequently not available on campuses.

10. The College should develop opportunities for faculty sabbaticals to allow them to work in their field outside of the institution. Specifically, consideration should also be given to the establishment of an exchange program for faculty and professionals employed in business and industry.

11. The College should establish a plan for periodically inviting selected employers to the College for a tour of College facilities and a discussion of educational opportunities provided by the College.

12. Seminars and workshops offered by the College to upgrade employees' job skills should be continued at the College, accompanied by increased efforts to expand this educational activity through improved communications with local businesses and with trade and professional organizations to inform these bodies of existing and potential services offered by the College.

13. The College should use the efforts of its President and its Board to articulate the message to the various local offices concerned with economic development that the greatest community effort should be assigned to increasing the employer demand for high technology occupations rather than to the highly competitive activity of attracting new high technology industries. The introduction of modern technology into the operations of existing businesses and industries and the establishment of new, traditional industries operating out of modern facilities will greatly enhance the demand for highly skilled technicians.

14. The College should develop programs designed to particularly address problems associated with the entry or re-entry of mature persons into the workforce, as well as the retraining of displaced workers.

15. The College should clearly define and communicate to high school counselors and students the prerequisite skills required for success in specific College programs and the employment opportunities associated with each program.

16. The College should continue to make the services of its Career Planning and Placement Offices available to both individuals and employers in the community.

17. The College should increase its efforts to become an integral part of the life of the community through its community service activities. Consideration should be given to the development of a community issues forum, greater emphasis on community volunteer service by faculty and staff, and the establishment of an advisory committee composed of College alumni to assist in identifying additional activities.

APPENDIX A

High School Seniors Planning to Attend Two-Year College

APPENDIX A

High School Seniors Planning to Attend Two-Year College

	Seek Immediate Employment (Percent)	Transfer to 4-Year School (Percent)
Accounting	7.4	3.5
Banking & Finance	5.6	0.9
Business Administration	12.7	4.6
Business Credit and Collections	1.9	2.0
Court Recording	2.5	2.6
Hotel, Restaurant, Institutional Management	3.6	2.4
Insurance Administration	1.7	2.0
Merchandising	3.9	2.3
Real Estate	1.5	1.3
Savings & Loan Administration	1.3	1.8
Secretarial Science	9.1	1.4
Small Business Management	6.7	6.5
Total Business & Commerce	57.9	31.3
Computer/Data Entry Operations	4.6	3.5
Computer Programming	8.8	11.5
Total Data Processing	13.4	15.0
Dental Assisting	1.3	4.3
Dental Lab	0.5	2.0
Medical Lab	1.0	5.6
Medical Assisting	1.4	5.3
Nursing	4.1	4.2
Opticianry	0.0	0.0
Respiratory Therapy	1.9	0.0
Physical Therapy	0.0	1.3
Total Health Service	10.2	22.7
Liberal Arts	0.0	3.3
Total Liberal Arts	0.0	3.3
Agricultural Mechanics	0.0	0.0
Air Conditioning and Refrigeration	1.0	0.0
Aviation and Pilot Training	0.8	2.3
Automotive Mechanics	2.3	0.9
Carpentry	0.0	0.0
Civil Engineering	0.0	0.0
Diesel Mechanics	1.5	0.0
Drafting and Design	1.0	7.2
Electricity	0.5	0.9
Electronics Engineering	1.4	2.1
Environmental Science	0.0	0.0
Heavy Equipment Maintenance	0.8	0.0
Mechanical Engineering	0.0	3.1
Small Machine Repair	0.5	0.9
Water Well Drilling	0.0	0.0
Total Engineering & Industrial Technology	9.8	17.4

	Seek Immediate Employment (Percent)	Transfer to 4-Year School (Percent)
Agricultural Business	0.0	0.0
Horticulture	0.5	0.0
Science	0.0	0.0
Small Animal Care	0.4	1.2
Total Natural Science and Agriculture	0.9	1.2
Elementary/Secondary Teaching	0.6	2.1
Fire Science/Firefighting	0.8	0.0
Interpreter Training (Signed Communications)	0.0	0.0
Legal Assisting	1.6	1.4
Library/Media Technology	0.4	0.0
Recreation Leadership	0.4	0.0
Social Work	1.1	2.2
Teaching Aide	0.4	0.0
Police/Corrections/Security	0.0	2.3
Total Public Service	5.3	8.0
Interior Decorating	1.5	0.0
Photography	0.7	1.2
Printing/Lithographic Technology	0.5	0.0
Total Arts & Design Technology	2.7	1.2
GRAND TOTAL	100.0	100.0

APPENDIX B

Interest by Programs of Household Members Who May Attend J. Sargeant Reynolds Community College

APPENDIX B

Interest by Programs of Household Members Who May Attend J. Sargeant Reynolds Community College

	Obtain Immediate Job Skills (Percent)	Obtain Transfer Credits (Percent)	Personal Interest (Percent)
Accounting	5.9	2.5	4.9
Banking and Finance	3.0	0	3.7
Business Administration/Management	9.7	5.0	7.5
Business Credit and Collections	1.3	0	1.1
Credit Union Management	0.3	0	0
Data Processing and Related Programs	17.5	12.5	13.5
Executive Housekeeping	0.5	0	0
Food Service Management	0.8	0	0
Hotel/Motel, Restaurant Management	1.1	0	0.4
Insurance Administration	0.8	0	0.4
Merchandising	1.9	2.5	0.7
Real Estate	1.6	0	1.5
Secretarial Science	3.2	0	1.5
Small Business Administration	1.6	3.8	3.4
Total Business	49.2	26.3	38.6
Administration of Justice	2.4	0	1.1
Child Care	1.1	1.2	1.5
Education	1.3	2.5	0.7
Fire Science	0.5	0	0.4
Interpreter Training for the Deaf	0.3	0	0.7
Legal Assisting	1.1	1.2	0
Library Science	1.6	0	0.4
Recreation Leadership	0	2.5	0.7
Social Science	1.9	2.5	1.1
Total Public Service	10.2	9.9	6.6
Dental Assisting	0.5	2.5	0.4
Dental Laboratory Technology	0.5	1.2	0.4
Dietetics	1.3	1.2	0.7
Medical Assisting	0.8	1.2	1.1
Medical Laboratory Technology	0.3	2.5	0.4
Nursing	2.2	3.8	3.0
Respiratory Therapy	0	1.2	0
Total Health Technology	5.6	13.6	6.0

	Obtain Immediate Job Skills (Percent)	Obtain Transfer Credits (Percent)	Personal Interest (Percent)
Air Conditioning & Refrigeration	1.3	2.5	0
Automotive Body Repair	0.5	0	1.1
Automotive Mechanics	1.3	2.5	3.7
Carpentry	1.3	0	1.9
Diesel Mechanics	0	1.2	0
Drafting and Design	3.5	2.5	1.9
Electricity	2.4	1.2	1.9
Electronics Technology	3.8	1.2	3.0
Civil Engineering	1.3	0	0.7
Engineering (for transfer)	0.5	3.8	0.7
Mechanical Engineering	0.8	1.2	0.7
Environmental Science	0.8	1.2	1.1
Robotic Operations and Maintenance	0.3	0	0.4
Small Engine/Appliance Repair	1.3	2.5	1.9
Total Engineering Trade and Industrial	19.1	19.8	19.0
Interior Decorating	1.6	1.2	5.2
Media Production (TV-Radio)	1.6	2.5	2.2
Photography	3.2	0	7.1
Printing-Lithographic Operations	0.5	1.2	1.1
Total Arts and Design Technology	6.9	4.9	15.6
Agricultural Business	0.3	0	0.4
Agricultural Mechanics	0.3	1.2	0
Ground Water Resources (including Well Drilling and Geology)	0.5	1.2	0.7
Horticulture	1.3	0	3.4
Small Animal Care	1.3	2.5	2.2
Total Agriculture and Natural Resources Technology	3.7	4.9	6.7
Liberal Arts	0.8	7.5	2.2
Science (for transfer)	0.8	7.5	1.1
Total Liberal Arts & Sciences	1.6	15.0	3.3

	Obtain Immediate Job Skills (Percent)	Obtain Transfer Credits (Percent)	Personal Interest (Percent)
Advanced Training Programs			
Dental Laboratory Technology	0.3	1.2	0.4
Emergency Room Nursing	0.3	0	0.4
Medical Assisting	0.8	1.2	1.1
Re-entry into Nursing	0	0	0.4
Respiratory Therapy	0	1.2	0
Other Advanced Training	1.6	1.2	1.5
Total Advanced Training	3.0	4.8	3.8
GRAND TOTAL	100.0	100.0	100.0

APPENDIX C

Persons Interviewed for Community Needs Assessment

APPENDIX C

Persons Interviewed for Community Needs Assessment

Mr. Rick Alesi
Purolator Courier

Mr. John Alexander
Dixie Electric Supply Company

Mr. L. Ray Ashworth
Virginia Highway Users Association
Richmond, Virginia

Ms. Jane Bailey
Wheat First Securities

Mr. Edward Becker
Management Recruiters

Ms. Karen Bennett
St. Luke's Hospital

Mr. Peter Bokach
Marriott Corporation

Mr. E. Brooks Bowen
Thalhimers

Mr. Louis L. Brooking, Jr.
Brookmeade Sod Farm

Mr. Waddy E. Bryant
International Brotherhood
Electrical Workers-Local 666

Ms. Madge Bush
Safeway Stores, Inc.

Mr. Robert Cartwright
Virginia Electric Power Company

Dr. John T. Casteen, III
Secretary of Education
Commonwealth of Virginia

Mr. N. C. Cecil
Ernst & Whinney

Mr. Henry C. Church
Greater Richmond Transit Company

Mr. David A. Clabo
Goochland County

Mr. Peter Clendenin
Virginia Health Care Association

Mr. Stuart Connock
Office of Planning & Budget
Commonwealth of Virginia

Mr. Gus Constantino
Wilson Feed & Seed

Mr. Robert Curtis
Data Management Systems

Mr. John Davenport
Home Builders Association of Richmond

Mr. Bill Davidge
Wiley & Wilson

The Honorable V. Earl Dickinson
Virginia House of Delegates

Ms. Gail Dickson
Kelly Health Care

Dr. Betty J. Diener
Secretary of Commerce and Resources
Commonwealth of Virginia

Mr. Robert C. Dively
DGR, Incorporated

Mr. James Dooley
Hanover National Bank

Mr. Bond Elam
Computerland

Mr. P. Scott Eubank
Division of Industrial Development
Commonwealth of Virginia

Dr. Berkwood M. Farmer
State Department of Agriculture

Mr. Harry E. Figgie, Jr.
Figgie International, Inc.

Mr. Edgar J. Fisher
Virginia Council on Health and Medical Care

Mr. Harry H. Garmon, Jr.
John Broughton Associates

Mr. Buzz Goodall
Continental Cablevision of Richmond

Mr. Joseph Goodwin
Goodwin Dental Laboratory, Inc.

Mr. Barry Goss
International Business Machines

Mr. Billy Gouldin
Strange's Florist

Mr. Vernon Greene
Lowes

Mr. Russell Hanssan
Metropolitan Economic Development
Council

Ms. Peggy Harrelson
Friends Association for Children

Mr. James E. Harrison, Jr.
Harrison's Furniture Service

Mr. James T. Hatcher, Jr.
Pleasant's Hardware

Mr. Phil Hazeldine
Wang Laboratories

Mr. James W. Heizer
Virginia Gasoline Retailers
Association, Inc.

Mr. Vernon Henley
Consolidated Bank and Trust
Company

Mr. Lou Hooper
Kings Dominion

Mr. Robert C. Jackson
Bear Island Paper Company

Mr. Gene James
Southern States Cooperative

Mr. John W. Jones
Virginia State Sheriffs'
Association

Mr. Donald Just
The Martin Agency

Mr. Michael J. Katos
Hunton & Williams

Mr. Joe Kienest
Klockner-Plentaplast of America

Mr. I. N. Koontz
Royer R. Stuart and Associates

Mr. Brent Langford
Safeway Stores, Inc.

Mr. Charles Luck
Luck Stone Corporation

Mr. Ralph Larry Lyons
Central Virginia Bank

Ms. Katherine T. Martin
Virginia Nurserymen's Association, Inc.

Mr. Bill May
Bill May TV

Mr. J. E. McAboy
Virginia Highway Users Association
Winchester, Virginia

Mr. James A. McComas, Jr.
Economic Development Office

Mr. Randolph McElroy
First and Merchants

Mr. John R. McGill
Reynolds Metals Company

Mr. J. Thomas McLeskey
J. Thomas McLeskey & Associates

Mr. Robert L. McRaney, Jr.
WWBT - Channel 12

Mr. Joseph Metzger
C&P Telephone Company

Mr. Myron S. Miller
Virginia Council of Churches, Inc.

Mr. Carroll Moore
Hewlett-Packard

Mr. Dick Nelms
Bowers, Nelms and Fonville

Mr. Pete Nelson
Odyssey Data Products

Mr. Gerald L. Nichols
CSX Corporation

Mr. Stuart D. Ogren
Virginia Hospital Association

Mr. Philip Ouzts
International Trade Administration
U. S. Department of Commerce

Mr. Claude Owens
Holly Farms Poultry

Mr. Henry C. Paige, Jr.
Ethyl Corporation

Mr. Stuart Patterson
J. C. Penney

Ms. Edna K. Paylor
Virginia Association of Homes
for the Aging

The Honorable Nina K. Peace
Hanover County Board of Supervisors

Mr. R. W. Pendergast
Robertshaw Controls Company

Mr. Charlie J. Poole
James River Corporation

Mr. Joseph M. Porter
Richmond Newspapers, Inc.

Mrs. Shelby Powers
Shelby's Lens Center, Inc.

Mr. Sumpter Priddy
Virginia Retail Merchants Association

Mr. Lee A. Putney
Peat Marwick Mitchell & Company

Mr. Robert M. Ramsey
Virginia Hotel and Motel Association

Mr. M. O. Roache
Roache Mercer and Faison, Inc.

Mr. Steven St. John
Roy B. St. John, Incorporated

The Honorable L. Ray Shadwell, Jr.
Henrico County Board of Supervisors

Mr. Robert J. Sherry
James River Corporation

Mr. Mark I. Singer
Virginia Chapter
National Electrical Contractors Association

Mr. Greg Solms
Mobil Chemical

Mr. Leonard Starr
Richfood, Incorporated

Mr. Ted Strasberg
Sears Roebuck Company, Inc.

Mr. Dick Strauss
Dick Strauss Ford

Mr. Morton Thalhimer
Neighborhood Theatres

Mr. Clarence L. Townes, Jr.
Richmond Renaissance, Inc.

Mr. Carson Tucker
Philip Morris, USA

Mr. Robert Ukrop
Ukrop Stores, Inc.

Mr. E. Massie Valentine
Johnson & Higgins of Virginia

Mr. Joseph F. Viverette
Federal Reserve Bank

Mr. William Wall
Jarvis Corporation

Mr. Larry Walton
United Way

Colonel Peter Ward
Louisa County Industrial Development Authority

Mrs. Pat Watkins
Virginia Dental Association

Mr. Bill Williams
Industrial Supply Corporation

Mr. J. Paul Williams
Virginia Agribusiness Council

Mr. Carlton Wilton
Wilton Properties, Inc.

Mr. Steven Winiecki
Roche Biomedical Laboratory

Mr. Walter Witschey
The Computer Company

Dr. Richard Wood, DDS
McGuire Clinic

Mr. W. Robinson Worth, Jr.
Printing Industries of the Virginias, Inc.

Ms. Kathy Young
Blue Cross/Blue Shield

Mr. Chris S. Zubof
Miller & Rhoades

APPENDIX D

Survey of Educational Needs in the Community

J. SARGEANT REYNOLDS COMMUNITY COLLEGE

SURVEY OF EDUCATIONAL NEEDS IN THE COMMUNITY

Every survey form returned helps to improve the College's understanding of our community. Please help your community college help you by completing and returning this survey this week.

DIRECTIONS: Please check the box that corresponds with your answer. Example: ☐ Yes ☐ No

DO NOT WRITE IN THIS COLUMN.

SECTION A **Responses in this section should be made according to the knowledge or best judgment of the individual completing this survey.**

1. Are you familiar with any of the areas of study offered by J. Sargeant Reynolds Community College? 6

☐ Yes ☐ No

2. What have been your most important sources of information about J. Sargeant Reynolds Community College? Check up to *three* sources. 7-14

☐ Personal experience as a present or former student
☐ Other person who has been a student at the College
☐ Radio
☐ Newspaper
☐ TV
☐ High school counselor or teacher
☐ Employer
☐ Other, please specify ______________________

3. J. Sargeant Reynolds Community College has three campuses. Please check the campus locations you are aware of. 15

☐ City of Richmond
☐ Goochland County
☐ Henrico County
☐ I do not know where any of the campuses are located

4. What do you see as the types of jobs for which there will be greatest demand by employers in the next five years? Please name them.

____

____

5. By checking any or all boxes, indicate what you think to be the purpose(s) of J. Sargeant Reynolds Community College.

☐ To provide two years of regular college work for students planning to transfer to a four-year college. 16

☐ To provide educational opportunities for adults beyond the normal college age. 17

☐ To keep young people out of the labor market for two years. 18

☐ To provide a source of trained manpower for area employers. 19

☐ To offer courses and programs which provide students with training and skills useful in getting a job. 20

☐ To provide a school for those who cannot get into any other college or university. 21

☐ To provide education to upgrade current job skills. 22

☐ To provide community services such as workshops, cultural programs and personal interest, non-credit courses. 23

☐ To offer special courses for persons not ready to begin college-level work. 24

☐ Other (specify) ______________________________ 25

6. How well do you think J. Sargeant Reynolds Community College is fulfilling its purposes? 26

☐ Very well ☐ Below Average ☐ No Opinion

☐ Adequately ☐ Poorly

7. Check the most important factors which you think attract students to attend J. Sargeant Reynolds Community College? Check up to *three* factors. 27-33

☐ The College's academic reputation

☐ The vocational and technical programs offered by the College

☐ The College's low tuition

☐ The opportunity to take the first two years of four-year degree program.

☐ Convenient times and locations of course offerings.

☐ Individual attention given to students

☐ Other, please specify ______________________________

8. Are you or any members of your household presently taking a course at J. Sargeant Reynolds Community College? 34

☐ Yes ☐ No

If answer is YES, how many members of your household are taking courses? 35

☐ one person ☐ three persons ☐ five persons

☐ two persons ☐ four persons ☐ more than five persons: How many? __________

9. How many persons 16 years old or older are in your household (include yourself)? 36

☐ one person ☐ three persons ☐ five persons

☐ two persons ☐ four persons ☐ more than five persons: How many? __________

10. Are there any persons in your household, *who are not presently attending* J. Sargeant Reynolds Community College, *who may attend* the College within the next three years (by Fall 1986)? 37

☐ Yes ☐ No

If your answer is YES, how many may come to the College? 38

☐ one person ☐ three persons ☐ five persons

☐ two persons ☐ four persons ☐ more than five persons: How many? __________

IF YOU ANSWERED YES TO QUESTION 10, PLEASE GO TO **SECTION B**. IF YOU ANSWERED NO TO QUESTION 10, GO TO **SECTION C** ON PAGE 5.

SECTION B **Questions in Section B relate to the individual household members who may attend J. Sargeant Reynolds Community College within the next three years. Please provide separate answers for each of these persons (including yourself, if appropriate) by assigning a particular household member to a designated response column as provided for after each question.** (Example: Bob, Sue, and Ann plan to attend the College; place all of Bob's responses in Column 1, Sue's responses in Column 2, and Ann's responses in Column 3). Please keep same column assignments for all questions in Section B.

11. What is the most likely reason each household member will be attending J. Sargeant Reynolds Community College? *Check only one answer* for each household member, using a separate column for each member. 39-41

	HOUSEHOLD MEMBER		
	#1	#2	#3
1. To complete a vocational degree or certificate.	☐	☐	☐
2. To take selected courses to upgrade job skills or to acquire new job.	☐	☐	☐
3. To complete a degree for transfer to four-year college.	☐	☐	☐
4. To take selected courses for transfer to four-year college.	☐	☐	☐
5. To take selected courses for personal satisfaction or enjoyment.	☐	☐	☐

12. Which campus would each household member be most likely to attend? 42-44

	HOUSEHOLD MEMBER		
	#1	#2	#3
Downtown (7th and Jackson Streets, near the Coliseum)	☐	☐	☐
Parham Road (1651 Parham Rd., near I-95)	☐	☐	☐
Western (Route 6, near Goochland Courthouse)	☐	☐	☐

13. Listed below are possible areas of study which you or members of your household may be interested in, either to receive a degree or certificate or to take selected courses. For each household member, check a maximum of two areas for which there is the greatest interest. 45-62

		HOUSEHOLD MEMBER		
		#1	#2	#3
BUSINESS	Accounting	☐	☐	☐
	Banking and Finance	☐	☐	☐
	Business Administration/Management	☐	☐	☐
	Business Credit and Collections	☐	☐	☐
	Computer Operations	☐	☐	☐
	Credit Union Management	☐	☐	☐
	Data Entry Operations	☐	☐	☐
	Data Processing	☐	☐	☐
	Executive Housekeeping	☐	☐	☐
	Food Service Management	☐	☐	☐
	Hotel/Motel, Restaurant Management	☐	☐	☐
	Insurance Administration	☐	☐	☐
	Merchandising	☐	☐	☐
	Real Estate	☐	☐	☐
	Savings and Loan Administration	☐	☐	☐
	Secretarial Science	☐	☐	☐
	Small Business Administration	☐	☐	☐
PUBLIC SERVICE	Administration of Justice (Law Enforcement, Corrections, Security)	☐	☐	☐
	Child Care	☐	☐	☐
	Education (Teacher training)	☐	☐	☐
	Fire Science	☐	☐	☐
	Interpreter Training for the Deaf	☐	☐	☐
	Legal Assisting	☐	☐	☐
	Library Science	☐	☐	☐
	Recreation Leadership	☐	☐	☐
	Social Service	☐	☐	☐

Question 13 continued on next page.

		HOUSEHOLD MEMBER		
		#1	#2	#3
HEALTH TECHNOLOGY	Dental Assisting	☐	☐	☐
	Dental Laboratory Technology	☐	☐	☐
	Dietetics	☐	☐	☐
	Medical Assisting	☐	☐	☐
	Medical Laboratory Technology	☐	☐	☐
	Nursing	☐	☐	☐
	Opticianry	☐	☐	☐
	Radiology	☐	☐	☐
	Respiratory Therapy	☐	☐	☐
ENGINEERING TRADE AND INDUSTRIAL	Air Conditioning & Refrigeration	☐	☐	☐
	Automotive Body Repair	☐	☐	☐
	Automotive Mechanics	☐	☐	☐
	Carpentry	☐	☐	☐
	Diesel Mechanics	☐	☐	☐
	Drafting and Design	☐	☐	☐
	Electricity	☐	☐	☐
	Electronics Technology	☐	☐	☐
	Engineering (Civil)	☐	☐	☐
	Engineering (General-for transfer to 4-year program)	☐	☐	☐
	Engineering (Mechanical)	☐	☐	☐
	Environmental Science	☐	☐	☐
	Heavy Equipment Maintenance	☐	☐	☐
	Nuclear Plant Operations and Maintenance	☐	☐	☐
	Robotic Operations & Maintenance	☐	☐	☐
	Small Engine/Appliance Repair	☐	☐	☐
ARTS AND DESIGN TECHNOLOGY	Interior Decorating	☐	☐	☐
	Media Production (TV/Radio)	☐	☐	☐
	Photography	☐	☐	☐
	Printing-Lithographic Operations	☐	☐	☐
AGRICULTURAL AND NATURAL RESOURCES TECHNOLOGY	Agricultural Business	☐	☐	☐
	Agricultural Mechanics	☐	☐	☐
	Ground Water Resources (including Well Drilling and Geology)	☐	☐	☐
	Horticulture	☐	☐	☐
	Small Animal Care	☐	☐	☐
LIBERAL ARTS/ SCIENCE	Liberal Arts (for transfer to four-year college)	☐	☐	☐
	Science (for transfer to four-year college)	☐	☐	☐

Advanced training programs designed for credentialing or extending existing skills:

	HOUSEHOLD MEMBER		
	#1	#2	#3
Dental Laboratory Technology	☐	☐	☐
Emergency Room Nursing	☐	☐	☐
Medical Assisting	☐	☐	☐
Medication Administration	☐	☐	☐
Re-entry into Nursing	☐	☐	☐
Respiratory Therapy	☐	☐	☐
Other, please specify ____________________ ____________________	☐	☐	☐

14. To prepare for taking college-level courses, do any household members believe that they need remedial courses in mathematics, reading, writing, chemistry or biology? 1

☐ Yes ☐ No

If your answer is "YES", please check appropriate box(es). 2-16

	HOUSEHOLD MEMBER		
	#1	#2	#3
Basic Mathematics	☐	☐	☐
Reading	☐	☐	☐
Grammar/Writing	☐	☐	☐
Chemistry	☐	☐	☐
Biology	☐	☐	☐

15. Will financial aid be required by any household member to attend J. Sargeant Reynolds Community College? Answer for each household member. 17-19

	HOUSEHOLD MEMBER		
	#1	#2	#3
Yes	☐	☐	☐
No	☐	☐	☐

16. Would you or any member of your household be interested in taking courses in which you could study at home without formal lectures or regular class meetings, but which would give you credit towards a degree or certificate? Answer for each household member. 20-22

	HOUSEHOLD MEMBER		
	#1	#2	#3
Yes	☐	☐	☐
No	☐	☐	☐

SECTION C **The questions in this section are asked only to ensure that the people to whom this survey has been sent are representative of the total population of the area served by the College. Questions are not asked about each individual member of the household, but about the person completing this form.**

17. What is your age? 23

☐ Under 18 ☐ 23-30 ☐ 46-55

☐ 18-22 ☐ 31-45 ☐ 56-64 ☐ Over 64

18. What is your ethnic background? 24

☐ White ☐ Hispanic

☐ Black ☐ American Indian

☐ Asian ☐ Other ______________________

19. What is your sex? 25

☐ Male ☐ Female

Please use the space below to suggest ways that J. Sargeant Reynolds Community College can improve its service to the community, either to individuals or to local businesses and industry.

____

____

____

____

____

____

____

APPENDIX E

Interview Schedules for Community Leaders

- Business
- Political
- Civic

BUSINESS AND INDUSTRY SURVEY

1. WITHIN YOUR BUSINESS OR INDUSTRY, WHAT OCCUPATIONAL OR JOB TRENDS DO YOU PERCEIVE IN THE NEXT FIVE YEARS?

☐ High Tech

☐ Service

☐ Business

☐ Industrial

(a) Are there new skills required for these jobs?

☐ Yes ☐ No

(b) What are these skills?

☐ High Tech training

☐ Basic Vocational

☐ Reading, Writing

☐ Other

2. COULD A TWO YEAR COLLEGE PROVIDE THIS TRAINING?

☐ Yes ☐ No

---

3. ARE THERE CERTAIN JOBS IN YOUR BUSINESS OR INDUSTRY FOR WHICH THERE IS CONSTANT DEMAND (VACANCIES)?

☐ Yes ☐ No

(a) What are these jobs?

- ☐ Clerical
- ☐ High Tech
- ☐ Service
- ☐ Other

4. ARE THESE VACANCIES DUE TO:

High Turnover ☐ Yes
☐ No

OR

Manpower Shortages ☐ Yes
☐ No

(a) Why is there high turnover; can stability be brought to this area?

(a) What skills or training are needed for jobs which are due to manpower shortages?

☐ High Tech

☐ Basic Skills

☐ Vocational training

☐ Other

5. HOW IMPORTANT DO YOU RATE PAST EMPLOYMENT EXPERIENCE WHEN YOU ARE CONSIDERING AN APPLICANT?

☐ Very Important

☐ Important

☐ Not Necessary

(a) How important do you rate classroom experience related to your industry?

☐ Very Important

☐ Important

☐ Not Necessary

5 (b). Which do you consider more important: past employment experience or classroom experience?

☐ Employment Experience

☐ Classroom Experience

6. AT PRESENT DOES YOUR ORGANIZATION USE IN-HOUSE TRAINING?

☐ Yes ☐ No

If yes, please specify --

6 (a). Would your organization like to discuss in-house training programs for your employees through JSRCC?

☐ Yes ☐ No

If yes, please specify --

6 (b). Would your facilities be available for training?

☐ Yes ☐ No

6 (c). For your employees only?

☐ Yes ☐ No

6 (d). For the general public?

☐ Yes ☐ No

7. IS YOUR SPECIFIC COMPANY UNDERGOING CHANGES IN JOBS AND JOB FUNCTIONS DUE TO TECHNOLOGICAL INNOVATIONS?

[ ] Yes [ ] No

(a) Could you describe these changes?

(For High Technology Companies only)

(b) Are there any new product lines which your company is developing that will significantly alter the job market?

[ ] Yes [ ] No

7 (c). Is there a need for retraining employees due to these changes?

☐ Yes ☐ No

7 (d). In what skill areas would retraining be needed?

☐ Basic Skills

☐ Voc Training

☐ High Tech

☐ Other

---

8. IS YOUR COMPANY PLANNING FUTURE EXPANSION?

☐ Expansion

☐ No Expansion

8 (a). Describe the nature of this expansion and the impact that it is likely to have on employment in your firm.

[ ] More Employees

[ ] Retraining

[ ] Other

8 (b). Are there new educational or skill areas required by this expansion?

[ ] High Tech

[ ] Vocational training

[ ] Basic Skills

[ ] Other

9. DO YOU KNOW OF ANY JSRCC GRADUATES CURRENTLY IN YOUR EMPLOYMENT?

☐ Yes ☐ No

9 (a). If yes, in what type(s) of jobs are they employed?

☐ Business

☐ Service

☐ Industrial

☐ High Tech

☐ Other

9 (b). In general, are you pleased with the training JSRCC provides?

☐ Yes ☐ No

10. WHAT ARE THE PRIMARY FACTORS WHICH ENTERED INTO YOUR FIRM'S DECISION TO LOCATE AND REMAIN IN THE RICHMOND AREA?

☐ Financial Climate

☐ Living Conditions

☐ Other

---

11. IN GENERAL, HOW WELL DO YOU FEEL JSRCC IS SERVING THE COMMUNITY?

☐ Well

☐ O.K.

☐ Poorly

☐ No Knowledge

11 (a). Comments:

12. DO YOU HAVE ANY ADDITIONAL COMMENTS WHICH MIGHT ASSIST JSRCC IN PLANNING FOR THE FUTURE?

☐ Social

☐ Basic Skills

☐ Job Training

☐ Other

13. WOULD YOU LIKE SOMEONE FROM THE COLLEGE TO CONTACT YOU (OR SOMEONE ELSE IN YOUR FIRM) TO DISCUSS THE EDUCATIONAL OPPORTUNITIES PROVIDED BY JSRCC?

☐ Yes ☐ No

Name of Contact Person: ______________________________

Address ______________________________

____

Phone Number ______________________________

POLITICAL LEADERS SUSRVEY

1. WHAT DO YOU SEE AS THE PRIMARY PROBLEMS OR NEEDS OF OUR COMMUNITY AT THE PRESENT TIME?

- ☐ Economic
- ☐ Social
- ☐ Educational
- ☐ Other

2. WHAT DO YOU ANTICIPATE AS OUR COMMUNITY'S GREATEST FUTURE NEEDS IN THE AREAS OF?

(a) Employment

- ☐ Training
- ☐ Shift in Industry
- ☐ Available jobs

(b) Education

- ☐ Basic Skills
- ☐ Vocational Training
- ☐ Other

(c) Community Services

- ☐ Child Care
- ☐ Housing
- ☐ Health Care
- ☐ Financial
- ☐ Recreational
- ☐ Other

3. ARE THERE SOCIAL TRENDS OR CHANGES YOU SEE OCCURRING IN OUR COMMUNITY IN THE NEAR FUTURE?

4. WHAT ROLE SHOULD THE COMMUNITY COLLEGES HAVE IN RESPONDING TO THESE NEEDS OR CHANGING CONDITIONS?

5. WHAT DO YOU SEE AS THE TYPES OF JOBS FOR WHICH THERE WILL BE THE GREATEST DEMAND BY EMPLOYERS IN THE NEXT FIVE YEARS?

[ ] Clerical

[ ] High Tech

[ ] Service

[ ] Other

6. DO YOU ANTICIPATE A NEED FOR JOB RETRAINING IN OUR AREA?

☐ Yes

☐ No

(a) In what occupations?

☐ Business

☐ Service

☐ Industrial

☐ High Tech

☐ Other

____

(b) Do you see government facilitating retraining in these occupations?

☐ Yes

☐ No

7. ARE THERE CHANGES WHICH MAY OCCUR IN THE LICENSING REQUIREMENTS OR PROFESSIONAL QUALIFICATIONS FOR SPECIFIC PROFESSIONS IN VIRGINIA?

☐ Yes

☐ No

If yes, please specify --

---

8. WHAT DO YOU FORESEE AS THE FINANCIAL CLIMATE IN OUR AREA IN THE NEAR FUTURE?

☐ Good

☐ Same

☐ Poor

☐ Don't know

☐ Other

9. ARE THERE ECONOMIC TRENDS YOU FORESEE WHICH MAY AFFECT BUSINESSES AND INDUSTRIES IN OUR AREA?

☐ Yes ☐ No

If yes, please specify --

☐ Inflation

☐ Interest Rates

☐ Competition

☐ Work Force

☐ Technology

☐ Other

---

10. HOW WOULD THIS FINANCIAL CLIMATE AFFECT COMMUNITY COLLEGES IN VIRGINIA?

☐ Increase Money

☐ Less Money

☐ No Change

☐ Other

11. WHAT COMMITMENT WILL GOVERNMENT BE ABLE TO MAKE TO EDUCATION IN THE CURRENT FINANCIAL ENVIRONMENT?

- ☐ More
- ☐ Less
- ☐ Same
- ☐ Other

12. ARE THERE SPECIFIC AREAS IN EDUCATION WHICH MAY BE TARGETED FOR THE GREATEST LEVELS OF FUNDING?

- ☐ Basic Skills
- ☐ Vocational Training
- ☐ High Tech
- ☐ Other

13. DO YOU ANTICIPATE ANY CHANGES IN STATE OF LOCAL POLICIES CONCERNING EDUCATION?

☐ Yes ☐ No

If yes, please specify --

☐ Competency Requirements

☐ Program Mix

☐ Application Regulation

☐ Other

---

14. DO YOU SEE STATE OR LOCAL GOVERNMENT RESPONDING TO CHANGE IN FEDERAL POLICY TOWARD EDUCATION?

☐ Yes ☐ No

If yes, please specify --

☐ More money

☐ Less money

☐ New policy

☐ Other

15. ARE THERE ECONOMIC DECISIONS WHICH GOVERNMENT MAY BE MAKING WHICH MAY CHANGE THE BUSINESS CLIMATE IN OUR AREA?

☐ Yes ☐ No

If yes, please specify --

☐ Fiscal

☐ Monetary

☐ Regulation

16. ARE THERE PROJECTS ON WHICH GOVERNMENT IS WORKING WHICH MAY AFFECT THE BUSINESS COMMUNITY?

☐ Yes ☐ No

If yes, please specify --

17. WHAT WOULD YOU LIKE TO SEE VIRGINIA DOING TO ATTRACT NEW BUSINESSES AND INDUSTRIES TO THE AREA?

- ☐ Fiscal Policy
- ☐ Education
- ☐ Capital Improvement
- ☐ Cooperation

18. ARE THERE PARTICULAR TYPES OF BUSINESSES OR INDUSTRIES WHICH YOU WOULD LIKE TO SEE OUR AREA ATTRACT?

- ☐ High Tech
- ☐ Industrial
- ☐ Retail
- ☐ Service
- ☐ Other

19. WHAT ROLE DO YOU SEE THE COMMUNITY COLLEGES PLAYING IN ATTRACTING THESE NEW BUSINESSES AND INDUSTRIES?

☐ Training Programs

☐ Involvement

☐ Other

---

20. ARE THERE TYPES OF BUSINESSES AND INDUSTRIES WHICH WOULD NOT BE COMPATIBLE WITH THE FUTURE PLANS FOR DEVELOPMENT OF OUR AREA?

☐ Industrial

☐ Controversial

☐ Expensive

☐ Environmental

☐ Other

21. HAVE ANY BUSINESS OR INDUSTRIES INDICATED AN INTEREST IN COMING TO THE AREA WHICH WOULD AFFECT THE PROGRAMS OFFERED AT JSRCC?

---

22. IN GENERAL, HOW WELL DO YOU FEEL JSRCC IS SERVING THE COMMUNITY?

[ ] Well

[ ] O.K.

[ ] Poor

[ ] Don't Know

23. ARE THERE AREAS IN WHICH YOU WOULD LIKE TO SEE JSRCC BECOME MORE ACTIVE?

☐ Social Trends

☐ Basic Skills

☐ Job Training

☐ Other

24. DO YOU HAVE ANY ADDITIONAL COMMENTS CONCERNING TRENDS WHICH MIGHT ASSIST JSRCC IN PLANNING FOR THE FUTURE?

CIVIC LEADERS SURVEY

1. WHAT ARE THE PRIMARY PROBLEMS AND NEEDS OF OUR COMMUNITY AT THE PRESENT TIME?

☐ Economic

☐ Social

☐ Educational

☐ Other

2. WHAT WOULD YOU LIKE TO SEE THE COMMUNITY DOING TO RESPOND TO THESE PROBLEMS AND NEEDS?

☐ Job Training

☐ Housing

☐ Financial Assistance

☐ Other

3. ARE THERE SIGNIFICANT TRENDS OR CHANGES YOU SEE OCCURRING IN OUR COMMUNITY IN THE NEAR FUTURE?

☐ Economic Changes

☐ Family Structure

☐ Social Changes

☐ Other

4. HOW IMPORTANT DO YOU SEE EDUCATION IN THE SOCIETY OF THE FUTURE?

☐ Very Important

☐ Important

☐ Not Important

5. IN WHAT ACADEMIC OR TRAINING AREAS SHOULD EDUCATION PLACE ITS GREATEST EMPHASIS TO MEET THE FUTURE NEEDS OF INDIVIDUALS IN OUR COMMUNITY?

☐ High Tech

☐ Vocational training

☐ Basic Skills

6. WHAT DO YOU SEE AS THE TYPES OF JOBS FOR WHICH THERE WILL BE THE GREATEST DEMAND BY EMPLOYERS IN THE NEXT FEW YEARS?

☐ High Tech

☐ Vocational Training

☐ Basic Skills

7. WHAT ROLE DO YOU SEE COMMUNITY COLLEGES HAVING IN ADDRESSING THE PRESENT AND FUTURE NEEDS OF OUR COMMUNITY?

☐ Vocational training

☐ Basic Skills

☐ Social

☐ Other

8. ARE THERE RESOURCES IN OUR COMMUNITY WHICH JSRCC COULD UTILIZE TO BETTER SERVE OUR AREA?

9. WHAT PRESENT CONTRIBUTION DO YOU FEEL JSRCC IS MAKING TO THE COMMUNITY?

10. HOW FAMILIAR DO YOU BELIEVE THE CITIZENS OF OUR AREA ARE WITH JSRCC AND THE PROGRAMS IT OFFERS?

☐ Very Familiar

☐ Familiar

☐ Not Familiar

☐ Don't Know

11. WHAT DO YOU SEE AS THE PRIMARY REASONS THAT INDIVIDUALS HAVE FOR ATTENDING JSRCC?

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12. ARE THERE PARTICULAR POPULATION GROUPS WHICH JSRCC SHOULD BE ATTRACTING AND IS NOT?

☐ Women

☐ Men

☐ Blacks

☐ Whites

12 (a). What special interest might attract these groups?

☐ More Publicity

☐ Better Recruiting

☐ Provide Child Care

☐ Wider variety of classes

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13. DO YOU HAVE ANY ADDITIONAL COMMENTS WHICH WOULD ASSIST JSRCC IN BETTER SERVING THE COMMUNITY?

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